

ORDER NO. MKE0101002C1

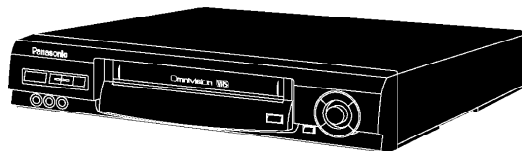
B3

Service Manual

Video Cassette Recorder

Omnivision **VHS**

PV-V4621 / PV-V4621-K / PV-V4661-K



SPECIFICATIONS

ITEM	SPECIFICATION	ITEM	SPECIFICATION
Power	Source: 120 V AC $\pm$ 12 V AC, 60 Hz $\pm$ 3 Hz	RF Out	CH 3/CH 4 switchable 72 dB μ (open voltage) 75 Ω unbalanced
	Consumption: Approx. 23 W (Power on), Approx. 3.0 W (Power off)		
Video	Head: 4 rotary heads helical scanning system	Tuner	Broadcast Channels: VHF 2-13, UHF 14-69 CABLE Channels: Midband A through I (14-22) Superband J through W (23-36) Hyperband AA-EEE (37-64) Lowband A-5-A-1 (95-99) Special CABLE channel 5A (01) Ultraband 65-94, 100-125
	Input Level: VIDEO IN Jack (Phono type) 1.0 Vp-p 75 Ω unbalanced Output Level: VIDEO OUT Jack (Phono type) 1.0 Vp-p 75 Ω unbalanced Signal-to-Noise Ratio: SP: more than 43 dB LP/SLP: more than 41 dB Horizontal Resolution: Color/Monochrome: more: SP :230 lines LP/SLP: 220 lines		
Audio	Head: Normal Mono : 1 stationary head Hi-Fi Stereo : 2 rotary heads	Video Signal	EIA Standard (525 lines, 60 fields) NTSC Color Signal
	Input Level: AUDIO IN Jack (Phono type) -10 dBv 50 k Ω unbalanced Output Level: AUDIO OUT Jack (Phono type) -8 dBv 1 k Ω unbalanced	Tape Speed	SP: 1-5/16 i.p.s (33.35 mm/s), LP: 21/32 i.p.s (16.67 mm/s), SLP: 7/16 i.p.s (11.12 mm/s) Record/Playback Time: 8 hr. with 160 min. type tape used in SLP mode FF/REW Time: Less than 1-1/6 min. (120 min. type tape) *Note: FF/REW Time may exceed specification according to tape condition.
	Frequency Response: Normal Mono: SP: 100 Hz-8 kHz LP: 100 Hz-6 kHz SLP: 100 Hz-5 kHz Hi-Fi Stereo: SP/LP/SLP: 20 Hz-20 kHz		
	Signal-to-Noise Ratio: Normal Mono: SP: more than 42 dB LP/SLP: more than 40 dB Hi-Fi Stereo: SP/LP/SLP: more than 60 dB	Tape Format	Tape width 12.7 mm (1/2 inch) high density tape
	Wow and Flutter: Normal Mono: SP: Less than 0.2 % WRMS LP: Less than 0.3 % WRMS SLP: Less than 0.4 % WRMS Hi-Fi Stereo: Less than 0.015 % WRMS	Operating Condition	5 $^{\circ}$ C-40 $^{\circ}$ C (41 $^{\circ}$ F-104 $^{\circ}$ F) (Temperature) 10 %-75 % (Humidity)
		Dimension (W x H x D)	430 mm x 98 mm x 242 mm (16-15/16 inch x 3-7/8 inch x 9-9/16 inch)
	Weight	2.7 kg (6.0 lbs.)	

Weight and dimensions shown are approximate.
Designs and specifications are subject to change without notice.

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WARNING

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

Panasonic®

1. PV-V4621 REPLACEMENT NOTE

There are 2 types of Main C.B.A. (E10) for PV-V4621.

VEPS6073HA is used in early products and has been changed to VEPS6073HC on running change basis in later products. When replacing Microcontroller IC (IC6001) or EEP ROM IC (IC6005), be sure to confirm which Main C.B.A. is used for the unit you are servicing.

The parts used for each Main C.B.A. are as follows.

Main C.B.A. (E10)	Microcontroller IC (IC6001)	EEP ROM IC (IC6005)
VEPS6073HA	MN101D02HPJ	LSUQ0030
VEPS6073HC	MN101D02HPJ1	KS24C011CS or AT24C01A10SI or BR24C01AF-E2 or BR24C01AFWE2 or KS24C011IS or M24C01-MN6

2. SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by  in the Schematic Diagrams, Circuit Board Layout, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

2. An Isolation Transformer should always be used during the servicing of VCR whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect VCR from being damaged by accidental shorting that may occur during servicing.
3. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.

4. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
5. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

LEAKAGE CURRENT COLD CHECK

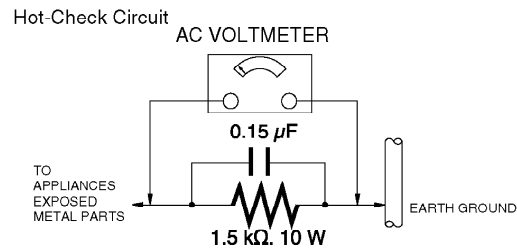
1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between $1\text{ M}\Omega$ and $5.2\text{ M}\Omega$. When the exposed metal does not have a return path to the chassis, the reading must be infinity.

LEAKAGE CURRENT HOT CHECK

(See figure 1.)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a $1.5\text{ k}\Omega$, 10 W resistor, in parallel with a $0.15\text{ }\mu\text{F}$ capacitor, between each exposed metallic part on the set and a good earth ground, as shown in figure 1.
3. Use an AC voltmeter, with $1\text{ k}\Omega/\text{V}$ or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 V RMS . A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks. Leakage current must not exceed $1/2\text{ mA}$. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

Figure 1



3. PREVENTION OF ELECTRO-STATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits, some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electrostatic discharge (ESD).

- 1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should remove electrostatic charge for potential shock reasons prior to applying power to the unit under test.**
- 2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.**
- 3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.**
- 4. Use only an antistatic solder removal device. Some solder removal devices not classified as "antistatic (ESD protected)" can generate electrical charge sufficient to damage ES devices.**
- 5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.**
- 6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or**

comparable conductive material).

7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.

CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.

8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

"NOTE to CATV system installer:

This reminder is provided to call the CATV system installer's attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical."

4. OPERATION GUIDE

5. SERVICE NOTES (PLEASE READ)

5.1. SERVICE NOTES

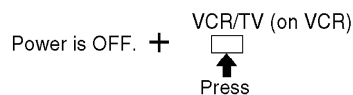
5.1.1. SIMPLIFIED FAULT FINDING DATA

Simplified Self-Diagnostic System facilitates finding the cause of the fault. A 4 digit fault code will be displayed in F.I.P.

The Simplified Fault finding data is stored in the Memory IC (IC6005). This data is cleared after it is displayed, and then the POWER button is pressed back on.

1. With power turned off, press VCR/TV button on VCR (for over 3 seconds if VCR is not in shut off condition).

Fig. 1-1



2. Fault code (4 digit number) will be displayed in F.I.P. as shown.

Fig. 1-2

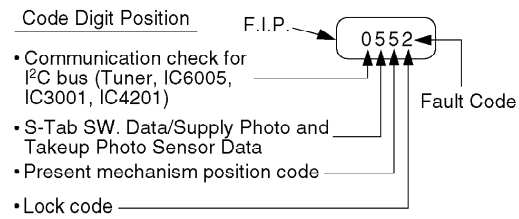


Fig. 1-3

Explanation of Codes	Code No.			
Communication check for I²C bus (Tuner, IC6005, IC3001, IC4201) (Refer to Fig. 1-4.)	0 F			
S-Tab SW. Data/Supply Photo and Takeup Photo Sensor Data (Refer to Fig. 1-5.)	1 8			
Present Mechanism Position Code Mechanism Position is indicated. (Refer to Fig. 1-6.)			1 2 3 4 5 6 7 8 9 A B C D	
Lock Code (See Note) • VCR is not in shut-off condition. • Reel lock. • Cylinder lock. • Exceeds loading/unloading time. (Mechanism Lock) • Exceeds Cassette loading/unloading time. (Cassette Lock) Tape Unloading (direction) Tape Loading (direction)			0 1 2 3 1 2	 4 4

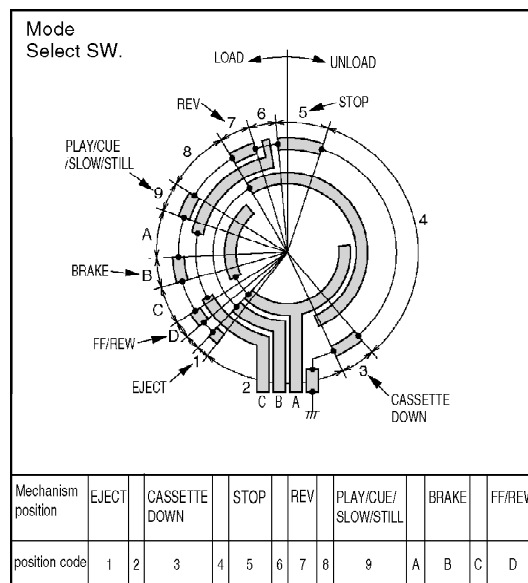
Fig. 1-4

Communication check for I ² C bus (IC6001 ↔ Tuner)	Communication check for I ² C bus (IC6001 ↔ IC6005)	Communication check for I ² C bus (IC6001 ↔ IC3001)	Communication check for I ² C bus (IC6001 ↔ IC4201)	Code No.
OK	OK	OK	OK	0
			NG	1
		NG	OK	2
			NG	3
	NG	OK	OK	4
			NG	5
		NG	OK	6
			NG	7
NG	OK	OK	OK	8
			NG	9
		NG	OK	A
			NG	b
	NG	OK	OK	C
			NG	d
		NG	OK	E
			NG	F

Fig. 1-5

S-Tab SW. condition	Supply Photo Sensor condition	Takeup Photo Sensor condition	Code No.
ON	OFF	OFF	1
	ON	OFF	2
	OFF	ON	3
	ON	ON	4
OFF	OFF	OFF	5
	ON	OFF	6
	OFF	ON	7
	ON	ON	8

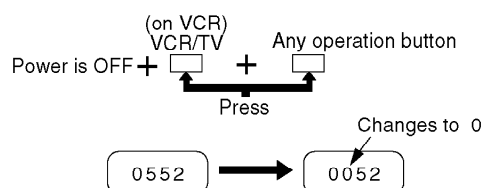
Fig. 1-6



- While pressing VCR/TV button on VCR with power turned off, press any operation button on either VCR, or remote to detect that a key has been pressed.

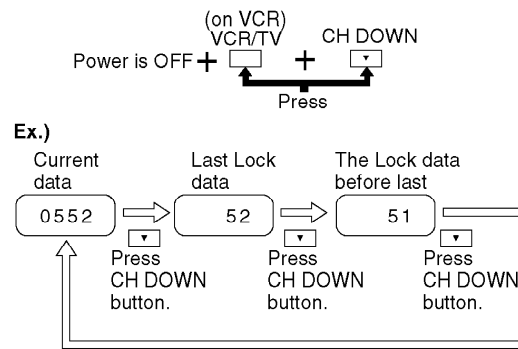
The 1st digit changes to "0" only when key is detected.

Fig. 1-7



- When 1 to 4 listed in Lock code occurs, Lock data will be stored in the EEPROM IC (Current data, Last Lock data, and the Last Lock data before last). Lock data displayed in F.I.P. can be changed by pressing CH DOWN button.

Fig. 1-8



Note:

1. Lock data will be kept after the AC Cord is unplugged.
2. When 1 to 4 listed in Lock code occurs for the first time, the VCR does not go into VCR shut-off condition. If it occurs again within a minute, the VCR goes into VCR shut-off condition. Then, the VCR stops and all VCR function buttons except for power become non-operational.

5.1.2. USAGE SCREEN MODE

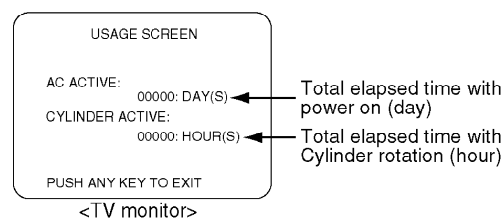
Function displayed on the TV monitor:

- the total elapsed "Power on" time (in days)
- the total elapsed "Cylinder rotation" time (in hours)

1. With power turned on and no cassette, press VCR/TV button on VCR and 7 key on remote together.

The USAGE SCREEN will be displayed on the TV Monitor.

Fig. 3



Note:

1. After replacing the Cylinder Unit, press COUNTER RESET button on remote in this mode. Only Total elapsed "Cylinder rotation" time (in hours) will be cleared to 0.
2. To release from Usage Screen Mode, press any operation button on VCR or insert a cassette tape in this mode. The VCR will return to normal operation mode.

5.1.3. EEPROM IC (IC6005), MAIN C.B.A. REPLACEMENT NOTE

After replacing EEPROM IC (IC6005) or Main C.B.A., be sure to perform the "PG SHIFTER ADJUSTMENT" in ELECTRICAL ADJUSTMENT procedures.

5.1.4. SERVICE POSITION

5.1.4.1. Service Position

Service Position	Purpose
Service Position (1)	Mechanism check Mechanical adjustment Electrical adjustment
Service Position (2)	Main C.B.A. check

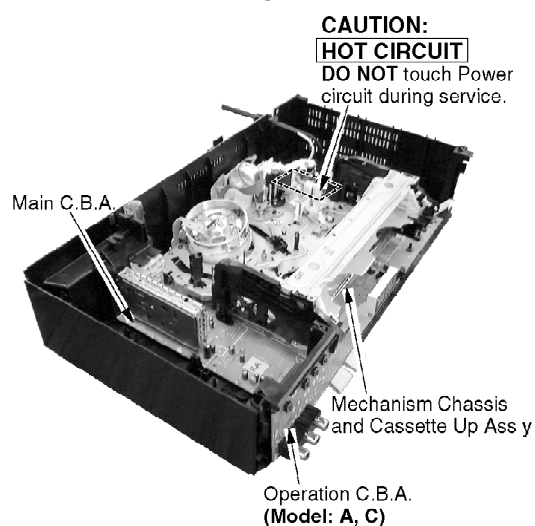
CAUTION:

HOT CIRCUIT (Primary circuit) exists on the Main C.B.A.

Use extreme care to prevent accidental shock when servicing.

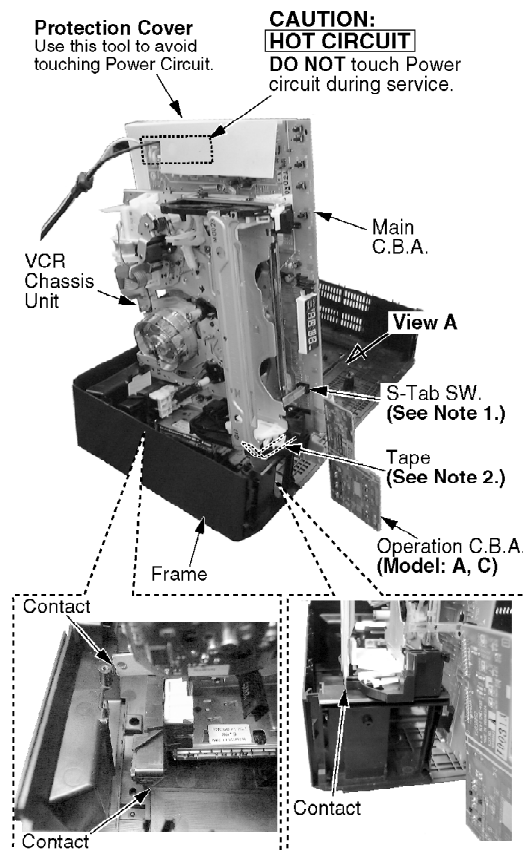
5.1.4.1.1. Service Position (1)

Fig. 4-1



5.1.4.1.2. Service Position (2)

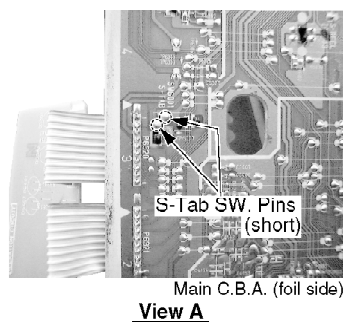
Fig. 4-2



Note:

1. It is possible that the S-Tab SW. may not work correctly in Service Position (2). (Recording can not be done). In this case, short the S-Tab SW. Pins on the foil side of the Main C.B.A. to turn this SW. on.

Fig. 4-3



Alternative method:
Cover the S-Tab SW. with masking tape.

2. Place the tape between the Cassette Up Ass'y and Main C.B.A. to get a stability.
3. When disassembling/assembling, refer to "**CABINET SECTION**" in

DISASSEMBLY/ASSEMBLY PROCEDURES.

To avoid touching Power Circuit, following Tool (Protection Cover) is recommended.

How to make the Protection Cover:

1. Cut a Cassette Tape Case as shown.

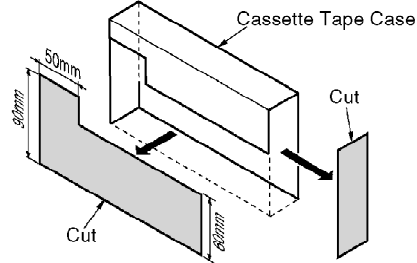


Fig. 4-4

2. Cover the Power Circuit portion on Main C.B.A. with it.

Note:
The Protection Cover is not supplied.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C

5.1.5. HOT CIRCUIT

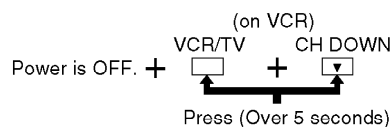
Primary circuit exists on the Main C.B.A.

This circuit is identified as "HOT" on the C.B.A. and in the Service Manual. Use extreme care to prevent accidental shock when servicing.

5.1.6. SERVICE MODE

In order to inhibit detection of the Supply & Takeup Photo Transistors, Reel Sensor, and Cylinder Lock, press and hold VCR/TV button and CH DOWN buttons on VCR together over 5 seconds in power off condition.

Fig. 5-1



The power comes on and the unit goes into service mode.

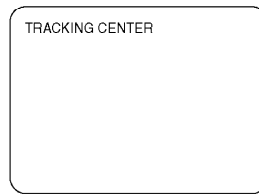
In this mode, Mechanism movement can be confirmed. When removing Cassette Up Ass'y, it can be confirmed without a cassette.

To release from this mode, press POWER button off or disconnect AC Plug.

5.1.7. TRACKING CENTER MODE (TRACKING FIX AT CENTER)

Insert the Cassette tape. Set the unit into Service Mode. Play back the Cassette tape. Press PLAY button in Play back mode. "TRACKING CENTER" will be displayed on the TV monitor. In this mode, the tracking is fixed at center. (Auto tracking and manual tracking functions are not operational.)

Fig. 5-2



<TV monitor>

To release from this mode, press **PLAY** or **STOP** button.

5.1.8. CAUTION FOR INSTALLATION OF FRONT PANEL ASS'Y

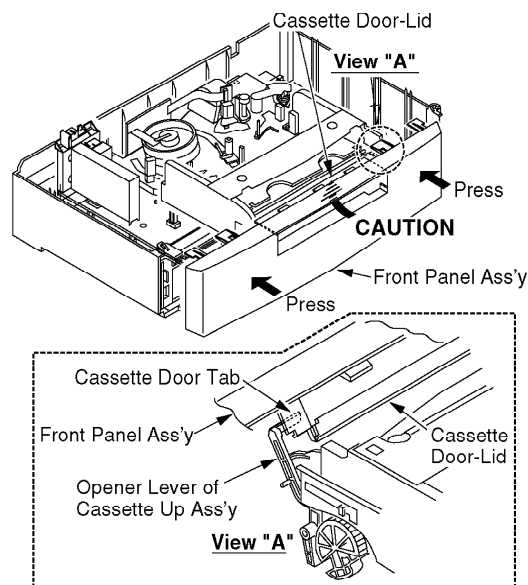
CAUTION:

Opener Lever may be damaged when Front Panel Ass'y is installed, with Cassette Door-Lid of Front Panel Ass'y and Opener Lever of Cassette Up Ass'y set incorrectly.

Install the Front Panel Ass'y as follows:

1. Swing the Cassette Door-Lid all the way open until the Cassette Door tab clears the Opener Lever.
2. Make sure that all locking tabs are aligned properly. Then, press the Front Panel straight in.

Fig. 6



5.1.9. METHOD FOR LOADING/UNLOADING OF MECHANISM

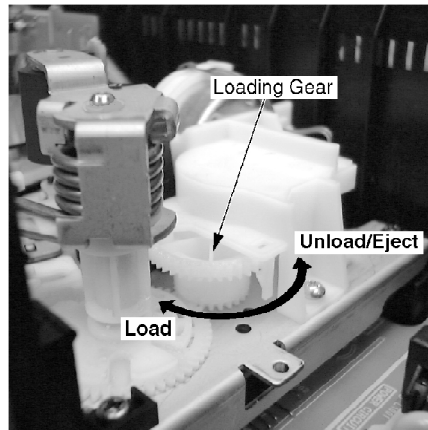
5.1.9.1. (Manual Method)

Turn the Loading Gear clockwise (for loading) or counterclockwise (for unloading) using needlenose pliers etc.

Note:

Do not use this method if Mechanism is jammed or locked.

Fig. 7-1



5.1.9.2. (Electrical Method)

Apply +10.0 V DC Power Supply to the Loading Motor terminals.

Loading

DC + to Portion "a," DC - to Portion "b"

Unloading

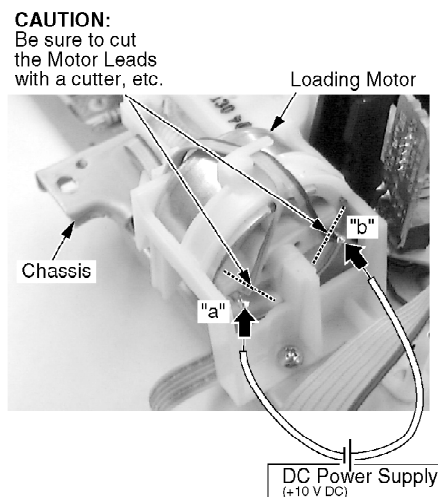
DC - to Portion "a," DC + to Portion "b"

CAUTION:

Before applying DC Power Supply, be sure to cut the Motor Leads with a cutter, etc.

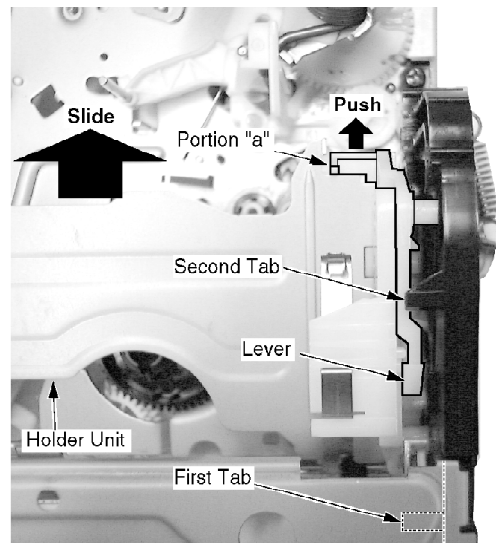
Otherwise, the Loading Motor Drive IC (IC2501) may be damaged. When reconnecting the Motor Leads, solder at below / 320 °C for less than 3 seconds.

Fig. 7-2



When loading without a cassette, push Portion "a" on the Holder Unit of Cassette Up Ass'y so that the Lever clear the First Tab and Second Tab.

Fig. 7-3



5.1.10. HOW TO REMOVE A JAMMED TAPE

CAUTION:

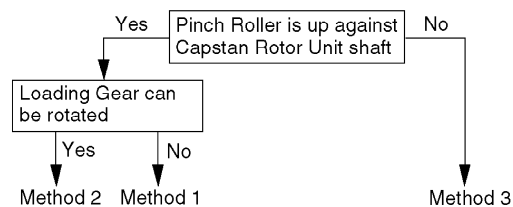
Wiper Arm Unit may be damaged or its spring may be out of place when the jammed tape is removed by force.

Remove a jammed tape as follows:

5.1.10.1. Manual Method

When a tape jam is encountered, check the tape loading condition and use the following procedure to remove a tape jam.

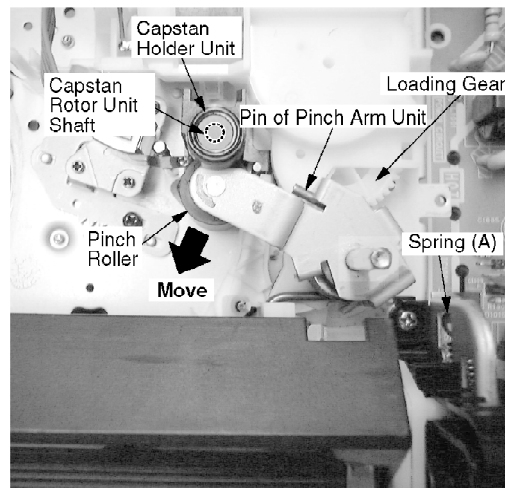
Fig. 8-1



Method -1:

- 1. Move the Pinch Roller Unit out by unhooking the Pin of Pinch Arm Unit so that the Pinch Roller is separated from the Capstan Rotor Unit shaft.**

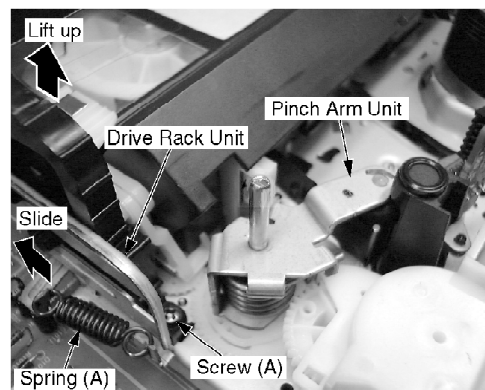
Fig. 8-2



Top View

2. Remove the tape from the tape path.
3. Rewind the tape into the cassette by rotating the Center Clutch Unit counterclockwise.
4. Unhook Spring (A) of the Drive Rack Arm.
5. Remove Screw (A).
6. Lift the Cassette Up Ass'y. While pulling the Cassette Up Ass'y out far enough so that it clears the Drive Rack Arm, slide the Drive Rack Unit as indicated by the arrow to remove the cassette tape from the Cassette Up Ass'y.
7. Check the cause of mechanical trouble and repair.

Fig. 8-3



Method -2:

1. Rotate Loading Motor counterclockwise with needlenose pliers, etc. so that the Pinch Roller is separated from the shaft of the Capstan Rotor Unit.

2. Perform Step 2 through Step 7 of Method -1.

Method -3:

1. Perform Step 2 through Step 7 of Method -1.

Note:

After repairing mechanical trouble, make sure that all gear alignments are correct, especially the Wiper Arm Unit and Drive Rack Unit of Cassette Up Ass'y. (Refer to "EJECT Position Confirmation**" in DISASSEMBLY/ASSEMBLY PROCEDURES.)**

5.1.10.2. Electrical Method

Electrical method can only be performed when the mechanism is moved by rotating the Loading Gear.

CAUTION:

1. Before applying DC Power Supply, be sure to cut the Motor Leads with a cutter, etc.

Otherwise, the Loading Motor Drive IC (IC2501) may be damaged. When reconnecting the Motor Leads, solder at below / 320 °C for less than 3 seconds.

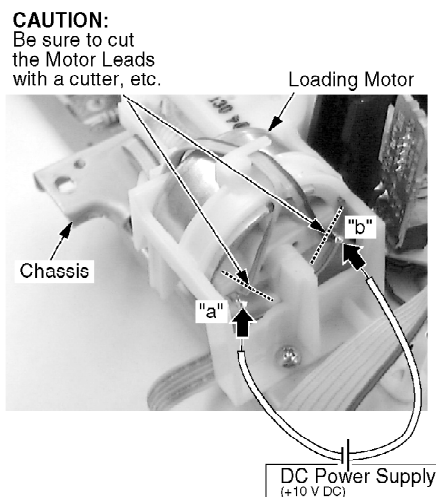
2. If loading does not start in approx. 2 seconds after DC Power Supply is applied, DO NOT continue to apply DC Power Supply. Instead, perform "Manual Method."

1. Be sure to cut the Motor Leads with a cutter, etc.

2. Apply +10.0 V DC Power Supply to the Loading Motor terminals.

3. When the Loading Posts reach the fully unloaded position, remove the Power Supply.

Fig. 9



4. Rewind the tape into the cassette by turning the Center Clutch Unit counterclockwise.

5. Eject the cassette by applying +10.0 V DC Power Supply again.

5.1.11. BLACK SCREWS ON THE CHASSIS

Black Screws are used on the Mechanism Chassis to identify screws that require adjustment.

5.1.12. HOW TO RESET ALL VCR MEMORY FUNCTIONS

To reset (clear) the select language, channel auto set and set clock functions to their initial power on condition (power on, no cassette inserted), hold down the PLAY and CH UP buttons on the unit together for more than 5 seconds.

Power will shut off.

5.1.13. HOW TO CONFIRM AUTO CLOCK SET FEATURE

- 1. Connect an RF cable from the output of one unit to the input of the test unit.**
- 2. Select corresponding RF channels.**
- 3. Playback a recording of P.B.S. channel including clock set data and confirm this feature.**

5.1.14. VARIABLE VOLTAGE ISOLATION TRANSFORMER

An Isolation Transformer should always be used during the servicing of VCR whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks. It will also protect VCR from being damaged by accidental shorting that may occur during servicing. Also, when troubleshooting the above type of Power Supply Circuit, a variable isolation transformer is required in order to increase the input voltage slowly.

5.1.15. SPECIAL NOTE

All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the

"ELECTROSTATICALLY SENSITIVE (ES) DEVICES" section of this service manual.

5.1.16. REPLACEMENT PROCEDURE FOR LEADLESS (CHIP) COMPONENTS

The following procedures are recommended for the replacement of the leadless components used in this unit.

1. Preparation for replacement

A. Soldering Iron

Use a pencil-type soldering iron that uses less than 30 watts.

B. Solder

Eutectic Solder (Tin 63 %, Lead 37 %) is recommended.

C. Soldering time

Do not apply heat for more than 4 seconds.

D. Preheating

Leadless capacitor must be preheated before installation. - (266 °F ~ 302 °F)

(130 °C ~150 °C) for about 2 minutes.

Note:

A. Leadless components must not be reused after removal.

B. Excessive mechanical stress and rubbing of the component electrode must be avoided.

2. Removing the leadless component

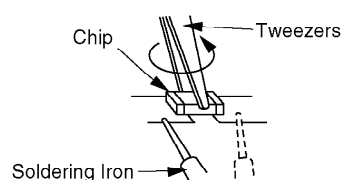
Grasp the leadless component body with tweezers and alternately apply heat to both electrodes. When the solder on both electrodes is melted, remove the leadless component with a twisting motion.

Note:

A. Do not attempt to lift the component off the board until the component is completely disconnected from the board by a twisting action.

B. Be careful not to break the copper foil on the printed circuit board.

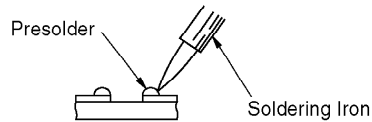
Fig. 10-1



3. Installing the leadless component

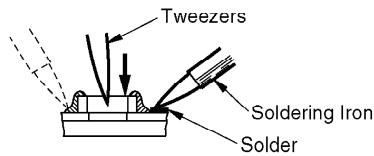
A. Presolder the contact points on the circuit board.

Fig. 10-2



B. Press the part downward with tweezers and solder both electrodes as shown below.

Fig. 10-3



Note:

Do not glue the replacement leadless component to the circuit board.

5.1.17. MODEL NO. IDENTIFICATION MARK

Use Marks shown in the chart below to distinguish the different models included in this Service Manual.

MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C
Not Used	Z

Note:

Refer to Item 3 of Schematic Diagram Notes of Schematic Diagram and Circuit Board Layout Notes, for mark "Z."

5.1.18. PV-V4621 REPLACEMENT NOTE

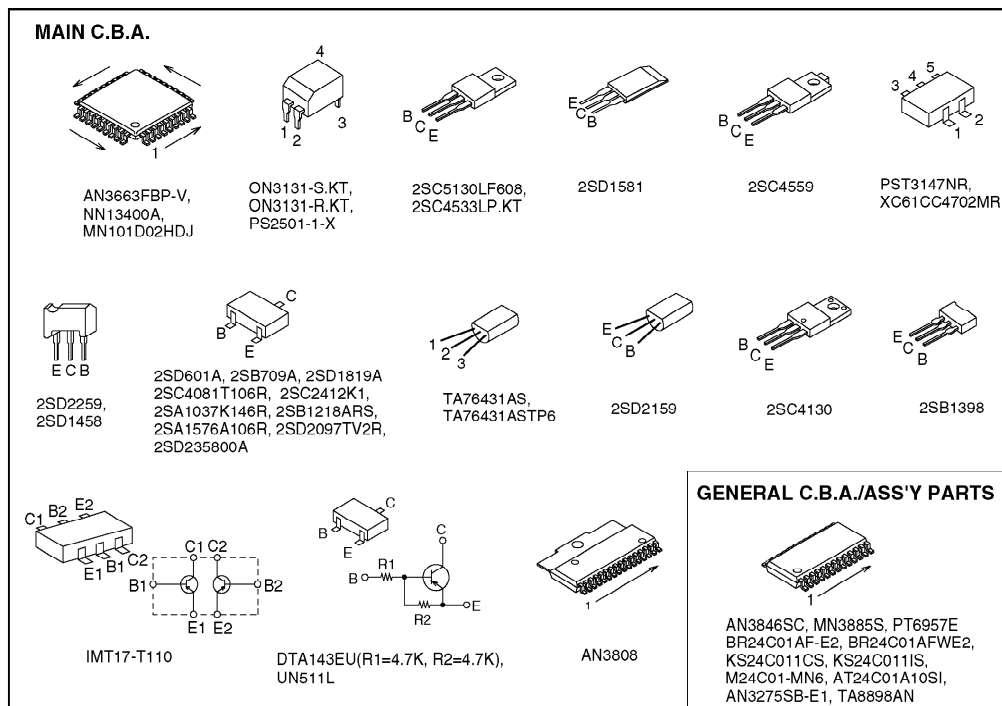
There are 2 types of Main C.B.A. (E10) for PV-V4621.

VEPS6073HA is used in early products and has been changed to VEPS6073HC on running change basis in later products. When replacing Microcontroller IC (IC6001) or EEP ROM IC (IC6005), be sure to confirm which Main C.B.A. is used for the unit you are servicing.

The parts used for each Main C.B.A. are as follows.

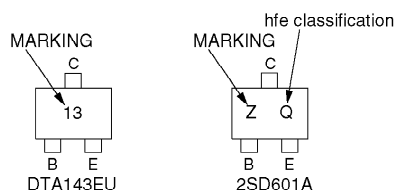
Main C.B.A. (E10)	Microcontroller IC (IC6001)	EEP ROM IC (IC6005)
VEPS6073HA	MN101D02HPJ	LSUQ0030
VEPS6073HC	MN101D02HPJ1	KS24C011CS or AT24C01A10SI or BR24C01AF-E2 or BR24C01AFWE2 or KS24C011IS or M24C01-MN6

5.2. IC, TRANSISTOR AND CHIP PART INFORMATION

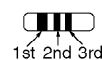


HOW TO READ THE IDENTIFICATION MARK OF CHIP COMPONENTS.

MARKING	PART NO.	MARKING	PART NO.
B	2SB709A	F	2SA1576A106R
B	2SC4081T106R	Z	2SD1819A
B	2SB1218ARS	Z	2SD601A
B	2SC2412K1	13	DTA143EU
F	2SA1037K146R		



HOW TO READ THE VALUES OF THE CYLINDRICAL TYPE CHIP COMPONENTS.



The widest color band must be read first for value.

1. RESISTOR

There are two types (ERD10LLJ... and ERD10TLJ...) of chip parts.

- 1) ERD10LLJ: Refer to above type.
- 2) ERD10TLJ : The narrow color band must be read first for value.

If this part is included in the parts list, be sure that the color band is read properly when servicing.

2. CAPACITOR

Because of the width of the color bands, the reading direction cannot be specified. However, the color band can be read on either side. Be sure to confirm the value using the schematic diagram.

CAUTION :

Once chip parts are removed, they must not be reused. Always use a new part when installing a chip part.

6. DISASSEMBLY/ASSEMBLY PROCEDURES

6.1. CABINET SECTION

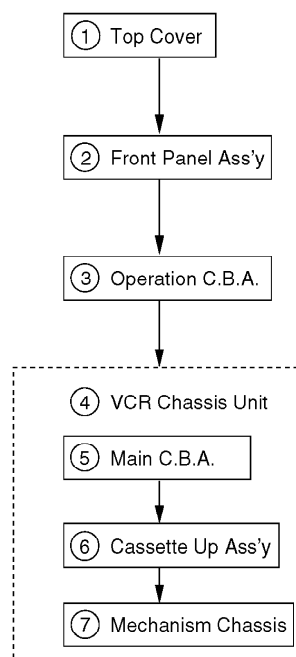
6.1.1. Disassembly Flowchart

Perform all disassembly procedures in the order described in the "Disassembly Flowchart" shown below. When reassembling, use the reverse procedure.

CAUTION:

Disconnect AC plug before disassembly.

Fig. D1



6.1.2. Disassembly Method

STEP /LOC. No.	PART	Fig. No.	REMOVE	Note
①	Top Cover	D2	2(S-1)	1
②	Front Panel Ass'y	D2	3(L-1), 3(L-2)	2
③	Operation C.B.A.	D2	(S-2), (L-3), Unsolder	---
④	VCR Chassis Unit	D2	(S-3), 3(S-4), (S-5), 2(S-6), (L-4), Grounding Plates	3
⑤	Main C.B.A.	D2	(S-7), P3501, P4001, P4002, P6201, P6202, Shield Plate	4
⑥	Cassette Up Ass'y	D2	(S-8), 2(S-9), (L-5), (P-1)	5
⑦	Mechanism Chassis	D2	-----	---
↑	↑	↑	↑	↑
A	B	C	D	E

How to read chart shown above:

A: Order of Procedure steps.

When reassembling, perform step(s) in reverse order.

These numbers are also used as the identification (location) No. of parts in Figures.

B: Part to be removed or installed.

C: Fig. No. showing Procedure or Part Location.

D: Identification of part to be removed, unhooked, unlocked, released, unplugged or unsoldered.

2(S-1) = 2 Screws (S-1), 2(L-1) = 2 Locking Tabs (L-1),

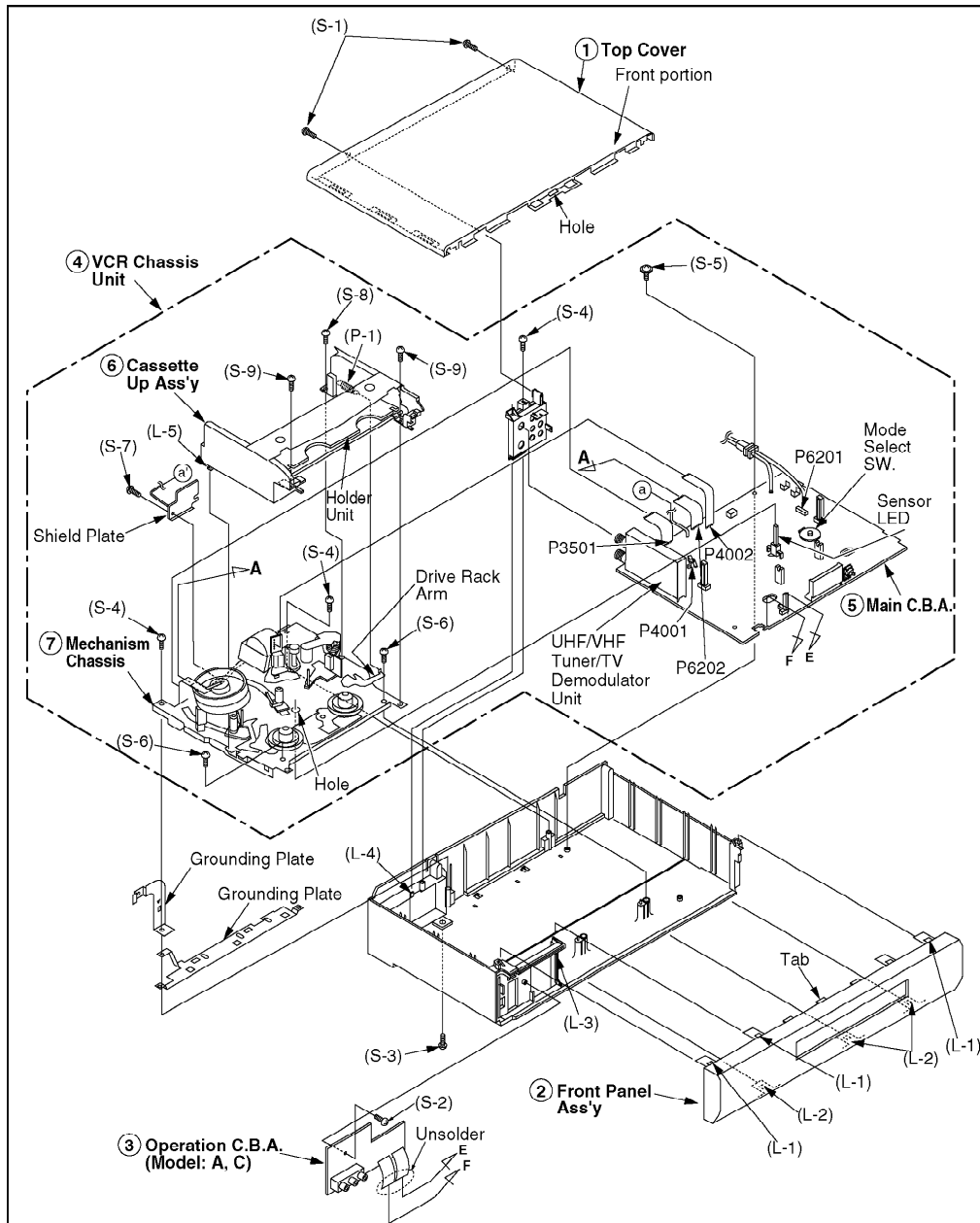
(P-1) = Spring (P-1)

E: Refer to "**Notes in chart.**"

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C

Fig. D2



6.1.2.1. Notes in chart

1. Installation of Top Cover

Install the Top Cover front portion at a downward angle so that the tab on the Front Panel Ass'y fits into the hole in the Top Cover. Then, lower the rear portion into place and tighten 2 Screws (S-1).

2. Installation of Front Panel Ass'y

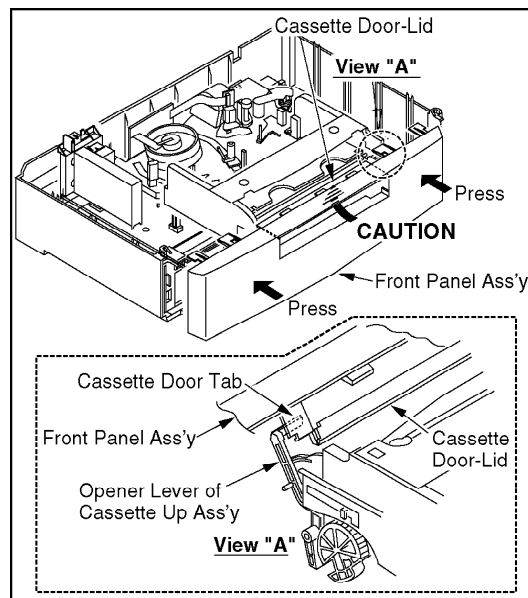
CAUTION:

Opener Lever may be damaged when Front Panel Ass'y is installed, with Cassette Door-Lid of Front Panel Ass'y and Opener Lever of Cassette Up Ass'y set incorrectly.

A. When installing the Front Panel Ass'y, swing the Cassette Door-Lid all the way open until the Cassette Door tab clears the Opener Lever.

B. Make sure that all locking tabs are aligned properly. Then, press the Front Panel straight in.

Fig. D3



3. Installation of VCR Chassis Unit

When installing 2 Screws (S-6), slide the Holder Unit of the Cassette Up Ass'y (Refer to "**METHOD FOR LOADING/ UNLOADING OF MECHANISM**" in Service Notes) to tighten screws. Then, slide it back to the EJECT Position.

Make sure that Mechanism and Cassette Up Ass'y are in the EJECT Position. (Refer to "**EJECT Position Confirmation**" in DISASSEMBLY/ASSEMBLY PROCEDURES.)

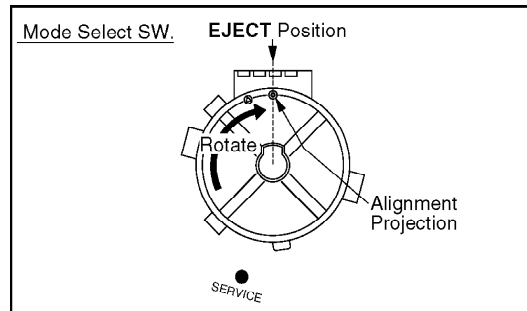
4. Installation of Mechanism Chassis and Cassette Up Ass'y onto Main C.B.A.

A. Make sure the Mode Select SW. on the Main C.B.A. is in EJECT position. If not, rotate the Mode Select SW. until the alignment

projection is in the EJECT Position.

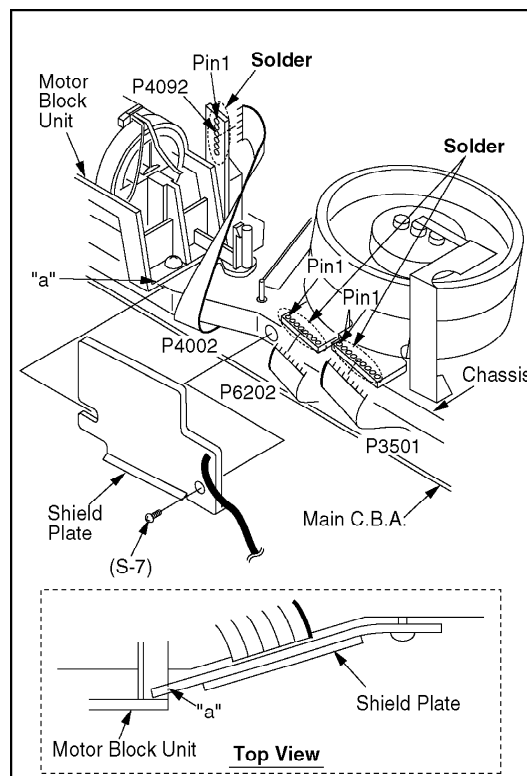
- B. Make sure the Mechanism and Cassette Up Ass'y are in the EJECT Position. (Refer to "EJECT Position Confirmation" in DISASSEMBLY/ASSEMBLY PROCEDURES.)**

Fig. D4



- C. Install the Mechanism Chassis and Cassette Up Ass'y straight onto the Main C.B.A. so that the Sensor LED clears the hole in the Mechanism Chassis and that 2 Connectors (P4001, P6201) are aligned and seated securely.**
- D. Connect the Flat Flexible Cables from P3501, P4002 and P6202 on the Main C.B.A. by soldering at below 320°C for less than 3 seconds as shown.**
- Install the Shield Plate as shown.**

Fig. D5



5. Installation of Cassette Up Ass'y

- A. Confirm that the Locking Tab (L-5) under the Cassette Up Ass'y is in Hole on the Mechanism Chassis when installing the Cassette Up Ass'y. Then, slide the Cassette Up Ass'y towards the back.**
- B. When installing 2 Screws (S-9), slide the Holder Unit (Refer to "METHOD FOR LOADING/UNLOADING OF MECHANISM" in Service Notes) to tighten screws. Then, slide it back to the EJECT Position.**
- C. Hook Spring (P-1) to the Drive Rack Arm on the Mechanism Chassis.**

6.2. MECHANISM SECTION

6.2.1. Disassembly/Reassembly Method

This procedure starts with the condition that the cabinet parts and Main C.B.A. have been removed.
When reassembling, perform the step(s) in the reverse order.

Perform all disassembly/reassembly and alignments procedures in EJECT Position.

Step/Loc. No.	Prior Step(s)	Part	Fig. No.	Remove	Alignment/Adjustment
①	-----	Grounding Plate Unit	J2-1	(S-1)	Adjustment
②	-----	Full Erase Head	J2-1	(L-1)	
③	1	Cylinder Unit	J2-1	3(S-3)	TAPE INTERCHANGEABILITY Adjustment
④	-----	Capstan Belt	J3-1	-	
⑤	-----	Support Angle	J3-1	(S-4), (S-5)	
⑥	5	Intermediate Gear B	J3-1	(L-2)	Gear Alignment
⑦	4,5,6	Main Cam Gear	J3-1	Main Cam Push Nut	Gear Alignment
⑧	4	Center Clutch Unit	J4-1	(W-1)	
⑨	4,8	Changing Gear Spring	J4-1	-	
⑩	4,8,9	Changing Gear	J4-1	-	
⑪	4,8,9,10	Idler Arm Unit	J4-1	-	
⑫	-----	Reel Gear	J5-1	2(L-3)	
⑬	4,5,6,7,8,9,10	Main Rod	J5-1	(W-2), (L-4)	Gear Alignment
⑭	-----	Stopper Angle	J6-1	(S-6)	
⑮	4,5,14	Capstan Rotor Unit	J6-1	-	
⑯	4,5,14,15	Oil Seal	J6-1	-	
⑰	4,5,14,15	Capstan Stator C.B.A.	J6-1	P2503, 2(S-7)	
⑱	-----	MR Head	J6-1	(S-8), Unsolder	MR HEAD GAP Adjustment
⑲	4,8,9,10,13	T Loading Arm Unit	J7-1	-	Gear Alignment
⑳	4,5,6,7,8,9,10,13,19	S Loading Arm Unit	J7-1	-	Gear Alignment
㉑	-----	T Brake Unit	J8-1	-	
㉒	-----	Tension Control Arm Unit	J8-1	3(L-5)	
㉓	21	T Reel Table	J8-1	-	
㉔	22	S Reel Table	J8-1	-	
㉕	22	Tension Arm Unit	J8-1	2(L-6), (P-1), (P-2)	
㉖	22,25	Loading Post Base-T Unit	J9	-	P2 AND P3 POST HEIGHT, TAPE INTERCHANGEABILITY Adjustment
㉗	22,25	Loading Post Base-S Unit	J9	-	
㉘	-----	Opener Piece	J10-1	2(L-7)	
㉙	4,5,6,7	Drive Rack Arm	J10-1	-	
㉚	28	Pinch Arm Unit	J10-1	-	
㉛	28,30	P5 Arm Unit	J10-1	-	
㉜	5,6,28	Intermediate Gear A	J10-1	-	Gear Alignment
㉝	-----	Motor Block Unit	J11-1	2(S-9)	
㉞	-----	Audio Control Head Unit	J11	(S-10)	TAPE INTERCHANGEABILITY Adjustment
㉟	5,6,28,30,32,33	Lift Gear	J11	-	
㊱	4,5,14,15,33	Capstan Holder Unit	J11	3(S-11)	
㊲	22,25	Tension Arm Boss	J11	(L-8)	
㊳	4	SS Brake Arm Unit	J5-1	(L-9), (P-3)	
㊴	4,5,14,15,17	Sub Rotor Unit	J6-1	(L-10)	
㊵	-----	Regulator Angle	J8-1	(S-12)	

A B C D E F

How to read chart shown above:

A: Order of Procedure steps.

When reassembling, perform steps(s) in reverse order.

These numbers are also used as the identification (location) No. of parts in Figures.

B: Steps to be completed prior to the current step.

C: Part to be removed or installed.

D: Fig. No. showing Procedure or Part Location.

E: Identification of part to be removed, unhooked, unlocked, released, unplugged or unsoldered.

(S-1) = Screw (S-1), (L-1) = Locking Tab (L-1),

(W-1) = Washer (W-1), (P-1) = Spring (P-1),

(C-1) = Cut Washer (C-1)

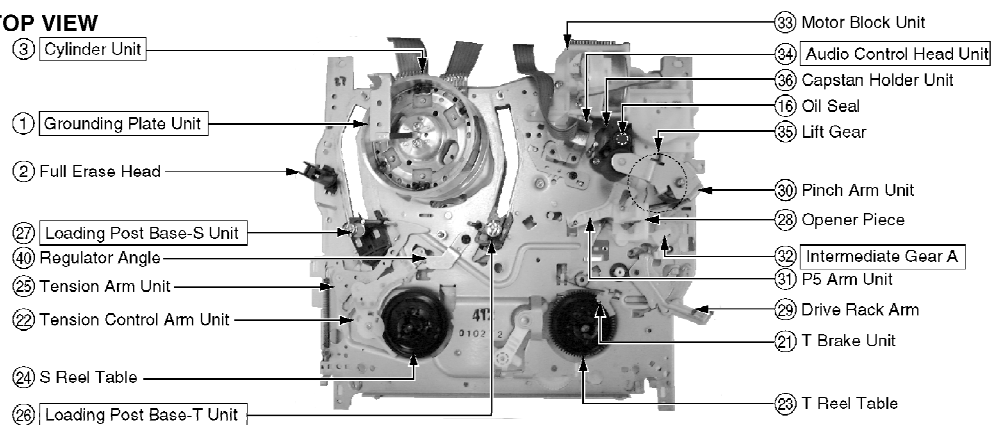
F: Alignment/Adjustment which is required when installing or replacing each Parts.

6.2.2. Inner Parts Location

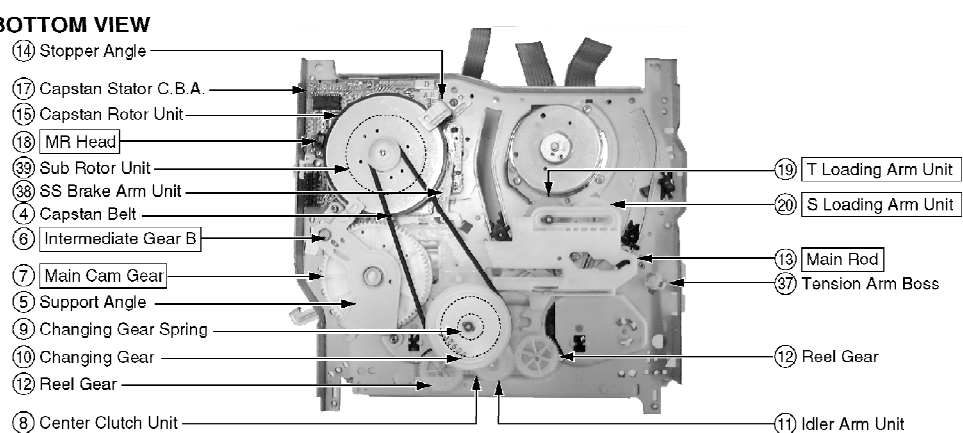
Note: BOX indicates alignment (Gear Alignment or Mechanical Adjustment) required when a part is replaced.

Fig. J1-1

TOP VIEW



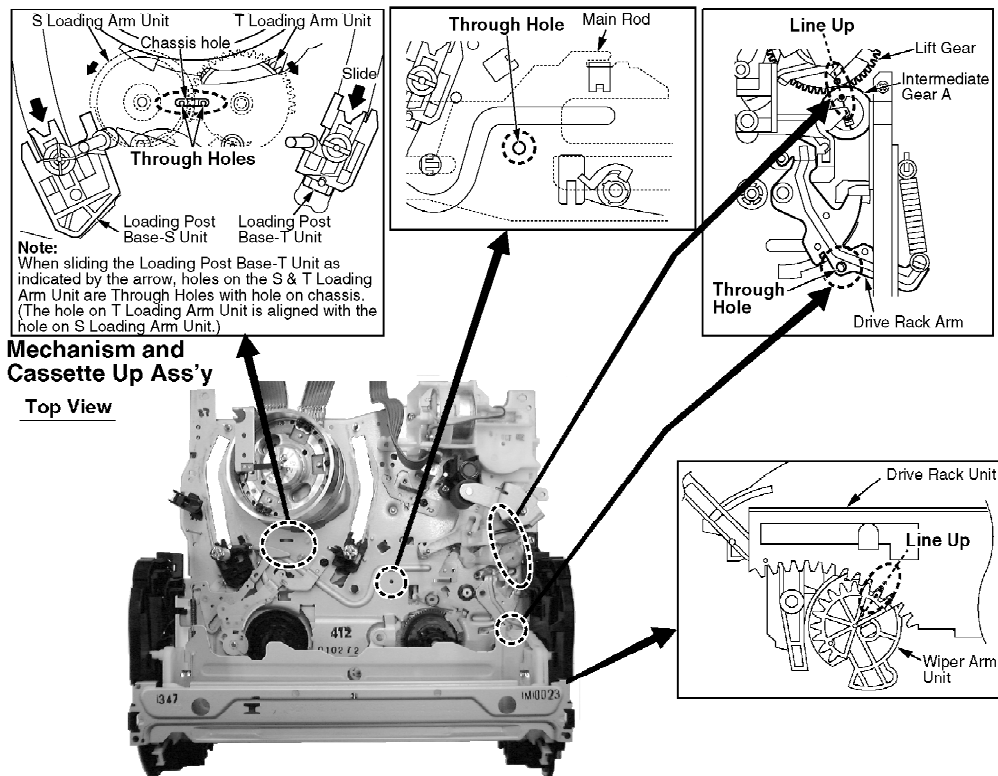
BOTTOM VIEW



6.2.3. EJECT Position Confirmation

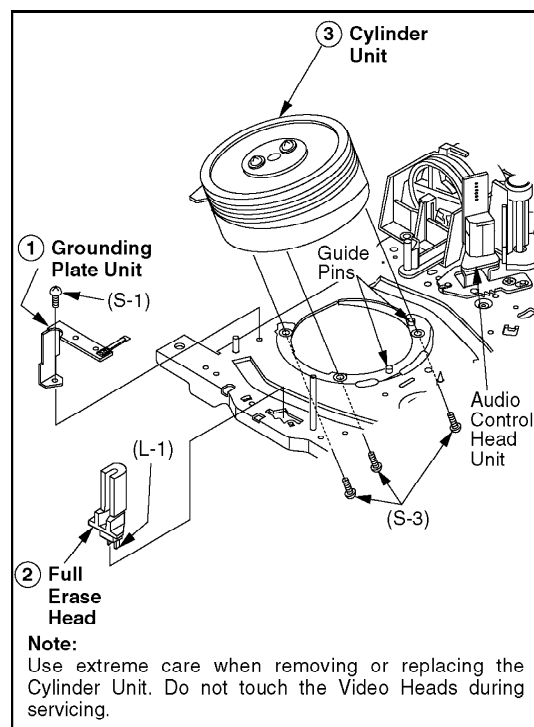
Fig. J1-2

Check the following alignment points to confirm that the Mechanism and Cassette Up Ass'y are in the **EJECT** Position from the top side.



6.2.4. Grounding Plate Unit, Full Erase Head, and Cylinder Unit

Fig. J2-1



6.2.4.1. Reassembly Notes

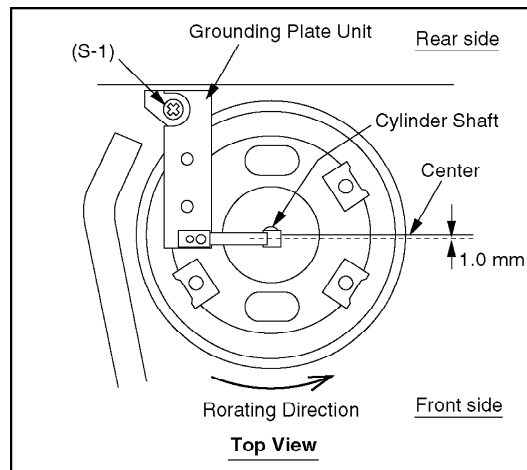
1. Adjustment of Grounding Plate Unit

A. After installing, make sure that the Grounding Plate Unit, on the top side of mechanism chassis, is positioned on the front side of the Cylinder shaft so that the center line of the plate is just less than 1.0 mm measured from the center of the Cylinder shaft.

If required, adjust the plate position by loosening Screw (S-1).
Never install the Grounding Plate Unit on the rear side of the Cylinder shaft.

Incorrect positioning will cause cylinder buzz.

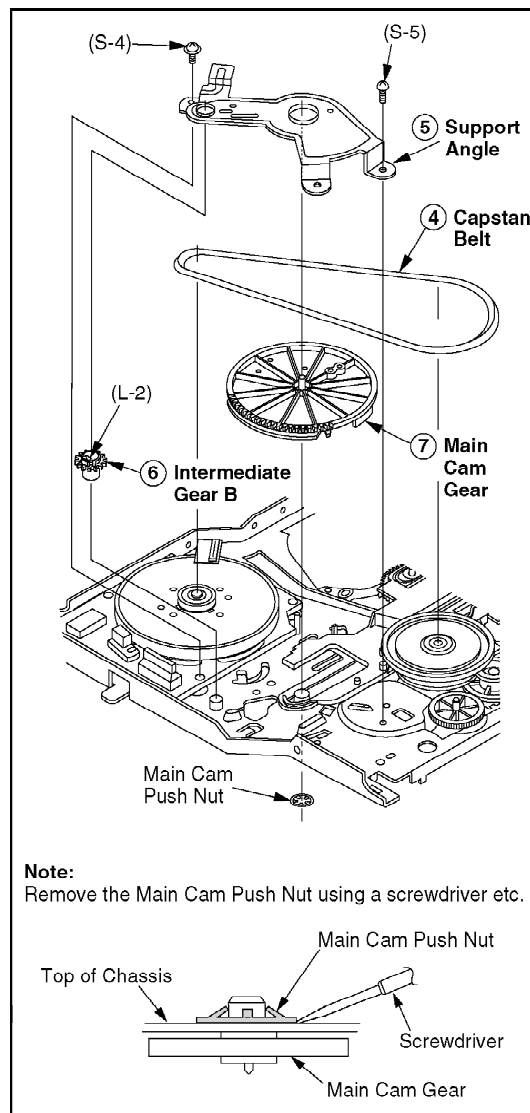
Fig. J2-2



2. After replacing the Cylinder Unit, clear the Total elapsed "Cylinder rotation" time (in hours) to 0. Refer to "**USAGE SCREEN MODE**" in SERVICE NOTES.

6.2.5. Capstan Belt, Support Angle, Intermediate Gear B, and Main Cam Gear

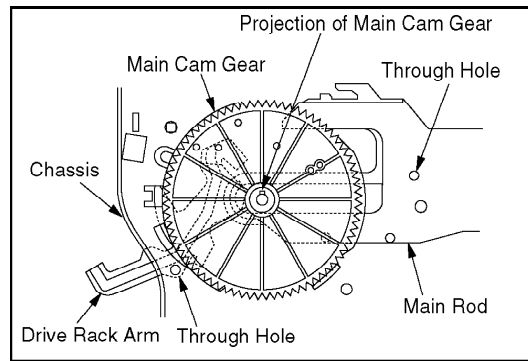
Fig. J3-1



6.2.5.1. Reassembly Notes

1. Alignment of Main Cam Gear, Drive Rack Arm, and Main Rod
 - A. Confirm that the hole on Main Rod is a Through Hole with a hole on chassis.
 - B. Confirm that the hole on Drive Rack Arm is a Through Hole with a hole on chassis.
 - C. Install the Main Cam Gear so that the projection of Main Cam Gear is in the upward position as shown.

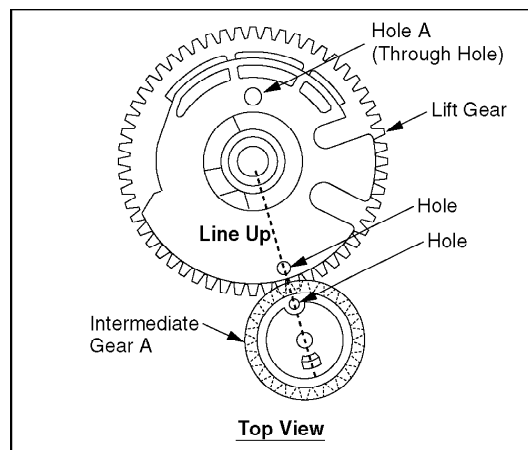
Fig. J3-2



2. Confirmation/Alignment of Intermediate Gear B, Main Cam Gear, and Intermediate Gear A

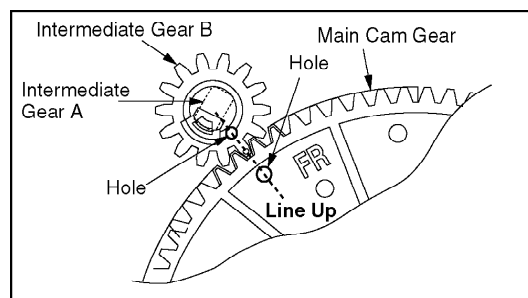
- A. Confirm that the Hole A on Lift Gear is a Through Hole with a hole on chassis.
- B. Confirm that the hole on Intermediate Gear A is aligned with the hole on Lift Gear.

Fig. J3-3



- C. Install the Intermediate Gear B so that the hole on the Intermediate Gear B is aligned with the hole on the Main Cam Gear.

Fig. J3-4

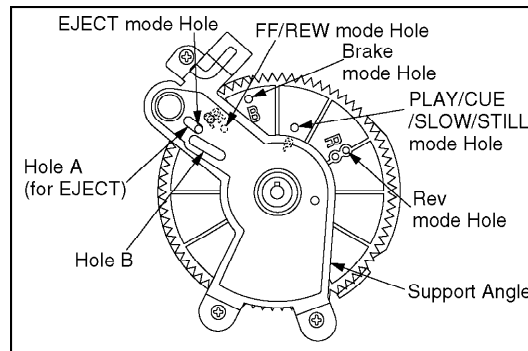


3. Holes on Main Cam Gear

- A. The EJECT mode Hole on Main Cam Gear should be a Through

Hole with Hole A on Support Angle in EJECT mode. The each mode Hole on Main Cam Gear should be a Through Hole with Hole B on Support Angle in each mode.

Fig. J3-5



4. Main Cam Gear Kit

A. Main Cam Gear is supplied as a Main Cam Gear Kit only (Kit No. VVGS0009).

Main Cam Gear Kit consists of a Main Cam Gear and a Main Cam Push Nut.

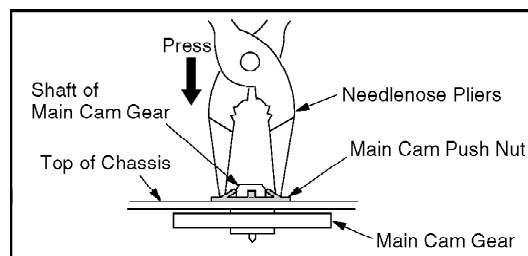
However, Main Cam Push Nut is available separately as a replacement part.

5. Installation of Main Cam Gear and Main Cam Push Nut

A. After installing the Support Angle, install the Main Cam Push Nut with Needlenose Pliers etc. so that it is flush with the chassis.

There may be some slight scratches on the Shaft of Main Cam Gear, when removing the Main Cam Gear. In case that the Main Cam Gear can be installed securely without tottering, it is fine to use the one. If any tottering, install all new parts.

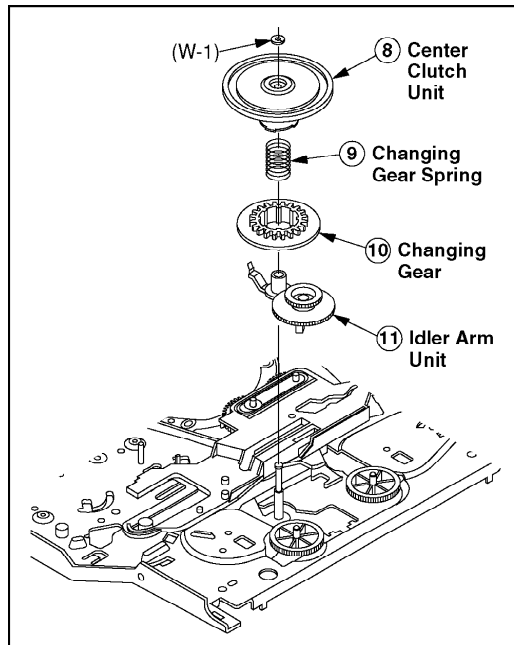
Fig. J3-6



6. The Main Cam Push Nut is not reusable. Install a new one.

6.2.6. Center Clutch Unit, Changing Gear Spring, Changing Gear, and Idler Arm Unit

Fig. J4-1

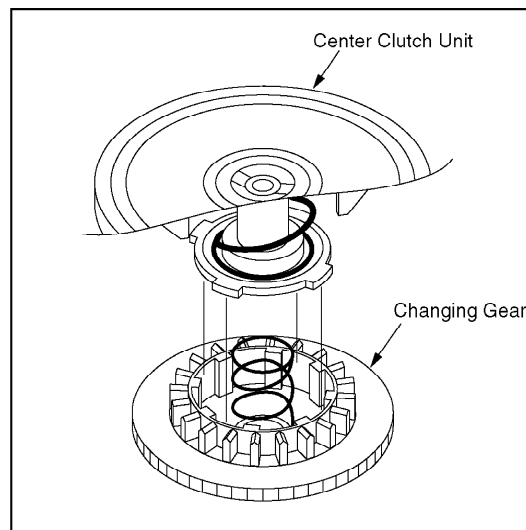


6.2.6.1. Reassembly Notes

1. Installation of Center Clutch Unit

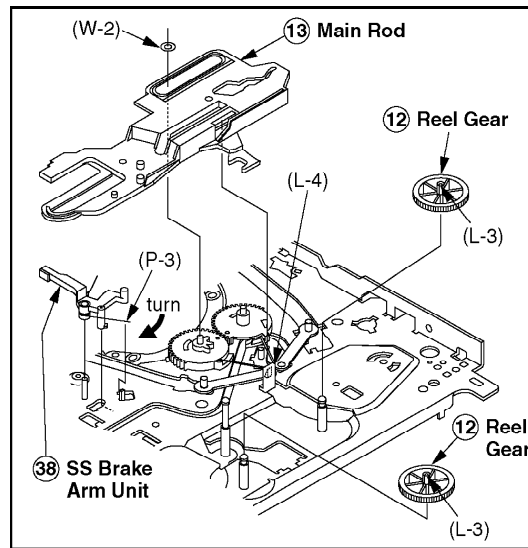
A. Fit the Center Clutch Unit into the Changing Gear.

Fig. J4-2



6.2.7. Reel Gear, Main Rod, and SS Brake Arm Unit

Fig. J5-1

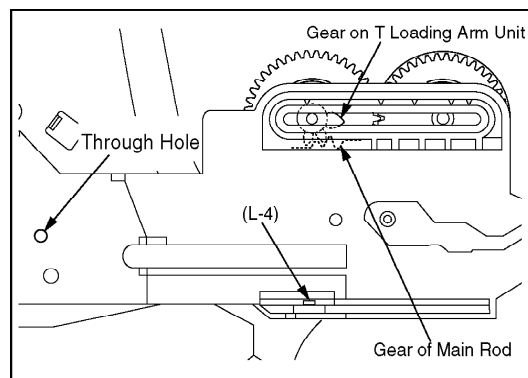


6.2.7.1. Reassembly Notes

1. Alignment of Main Rod and T Loading Arm Unit

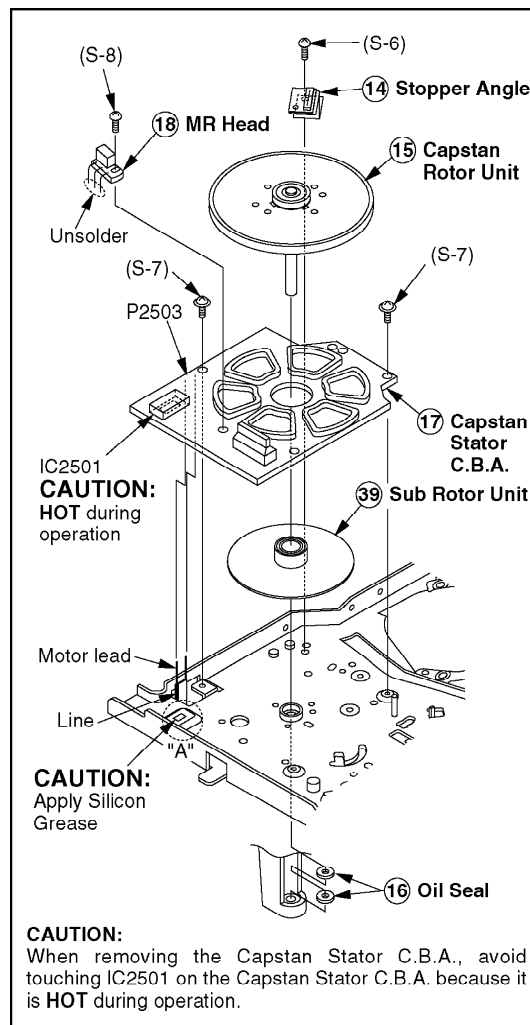
- A. Align the Gear on T Loading Arm Unit with Gear of Main Rod. Confirm that the Hole on Main Rod is a Through Hole with a hole on chassis.

Fig. J5-2



6.2.8. Stopper Angle, Capstan Rotor Unit, Oil Seal, Capstan Stator C.B.A., MR Head, and Sub Rotor Unit

Fig. J6-1



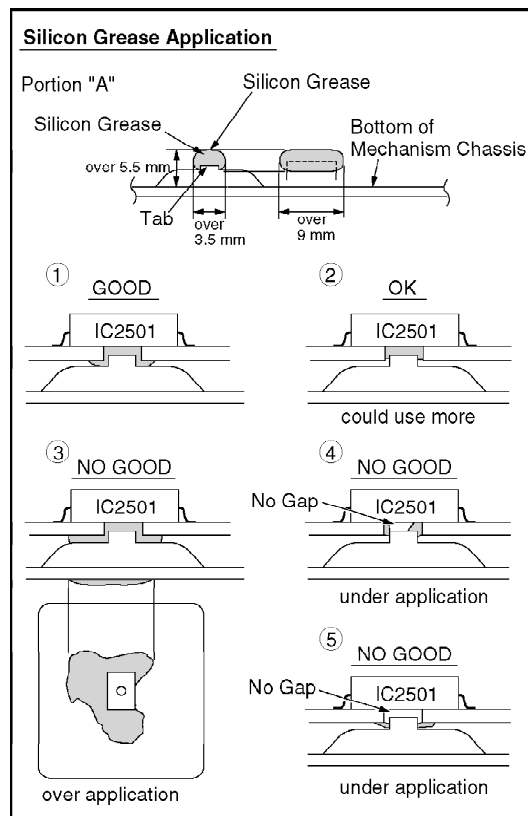
6.2.8.1. Reassembly Notes

1. Application of Silicon Grease

CAUTION:

When installing the IC2501 (AN3846SC) or Capstan Stator C.B.A., be sure to apply Silicon Grease (VFK1301) as shown. Be careful not to touch other parts with greased portion to prevent grease depletion.

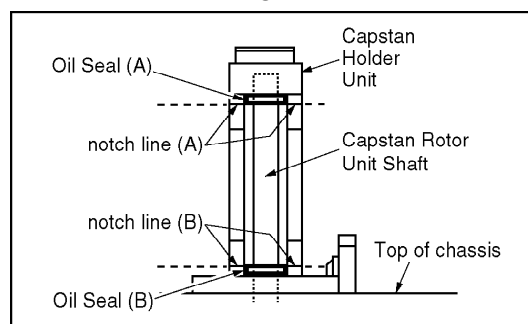
Fig. J6-2



2. Installation of Capstan Rotor Unit and Oil Seal

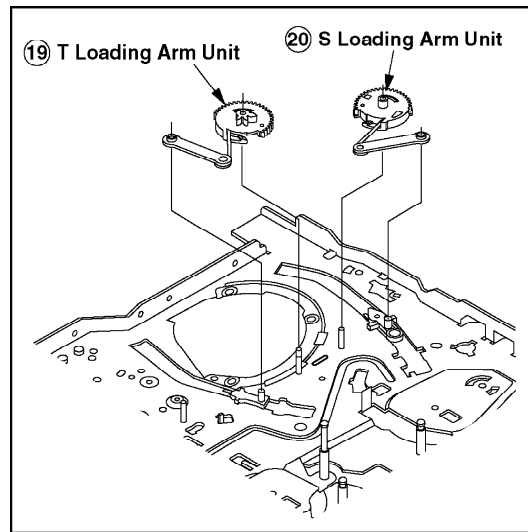
- A. Install the 2 Oil Seals into the Capstan Holder Unit. Then, insert the Capstan Rotor Unit Shaft into the hole of the Capstan Holder Unit so that shaft passes through 2 Oil Seals. Be careful not to scratch the Shaft or Capstan Holder Unit.
- B. Align the bottom of Oil Seal (A) with notch line (A).
Align the top of Oil Seal (B) with notch line (B).

Fig. J6-3



6.2.9. T Loading Arm Unit and S Loading Arm Unit

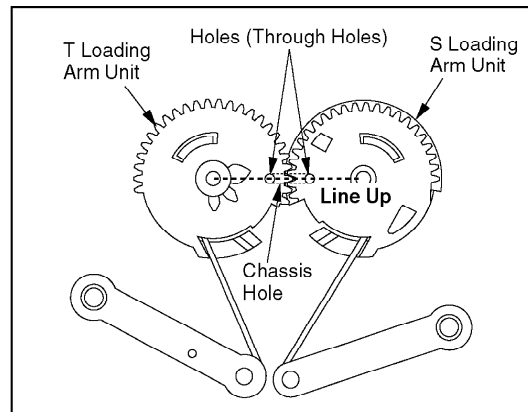
Fig. J7-1



6.2.9.1. Reassembly Notes

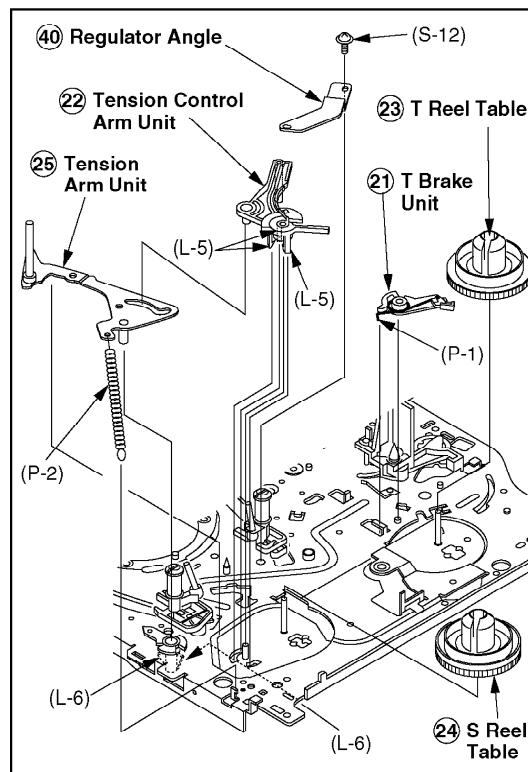
1. Alignment of T Loading Arm Unit and S Loading Arm Unit
 - A. Install the S Loading Arm Unit onto the chassis.
 - B. Install the T Loading Arm Unit so that the hole on T Loading Arm Unit is aligned with the hole on S Loading Arm Unit.
 - C. Confirm that the holes on the S & T Loading Arm Unit are Through Holes with hole on chassis.

Fig. J7-2



6.2.10. T Brake Unit, Tension Control Arm Unit, T Reel Table, S Reel Table, Tension Arm Unit, and Regulator Angle

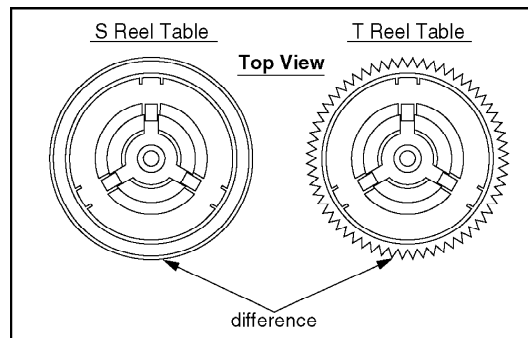
Fig. J8-1



6.2.10.1. Reassembly Notes

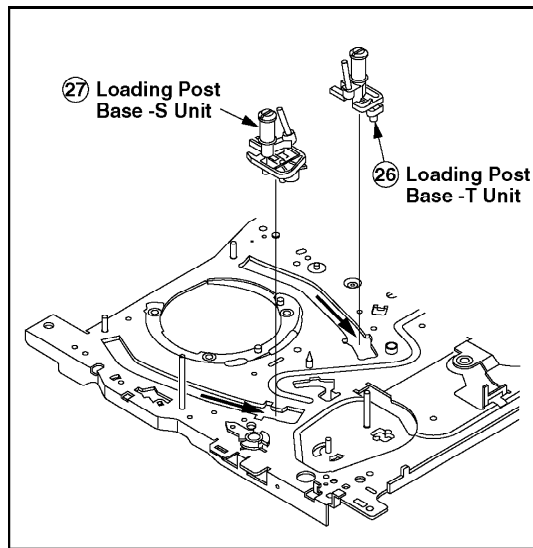
1. How to distinguish between S Reel Table and T Reel Table

Fig. J8-2



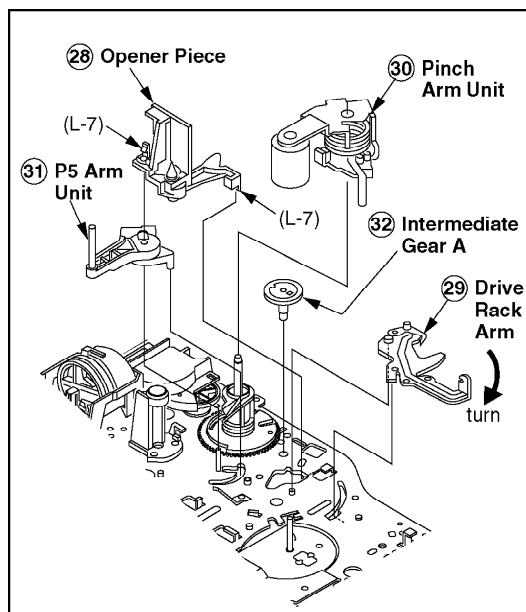
6.2.11. Loading Post Base -T Unit and Loading Post Base -S Unit

Fig. J9



6.2.12. Opener Piece, Drive Rack Arm, Pinch Arm Unit, P5 Arm Unit, and Intermediate Gear A

Fig. J10-1

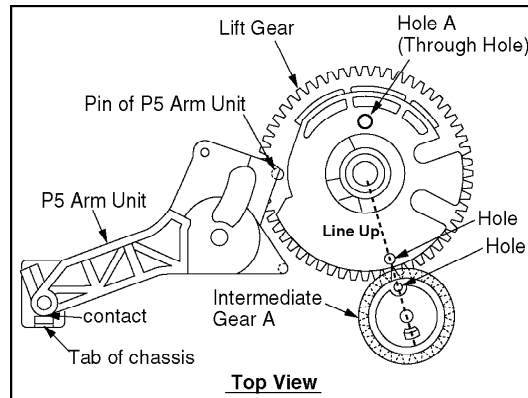


6.2.12.1. Reassembly Notes

1. Installation/Alignment of Intermediate Gear A, Lift Gear and P5 Arm Unit

- A. Rotate the Lift Gear so that Hole A on Lift Gear is a Through Hole with a hole on chassis.
- B. Install the Intermediate Gear A so that the hole on Intermediate Gear A is aligned with the hole on Lift Gear.
- C. Install the P5 Arm Unit so that it contacts with the tab of chassis.

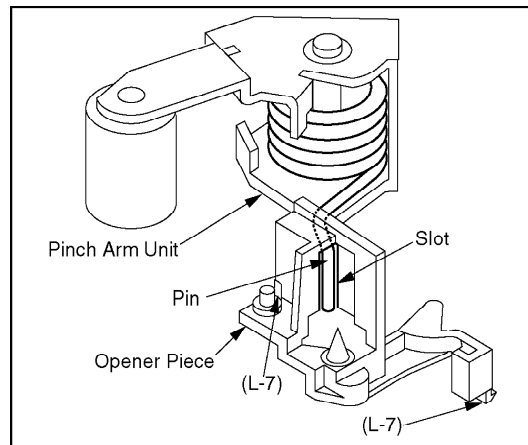
Fig. J10-2



2. Installation of Opener Piece

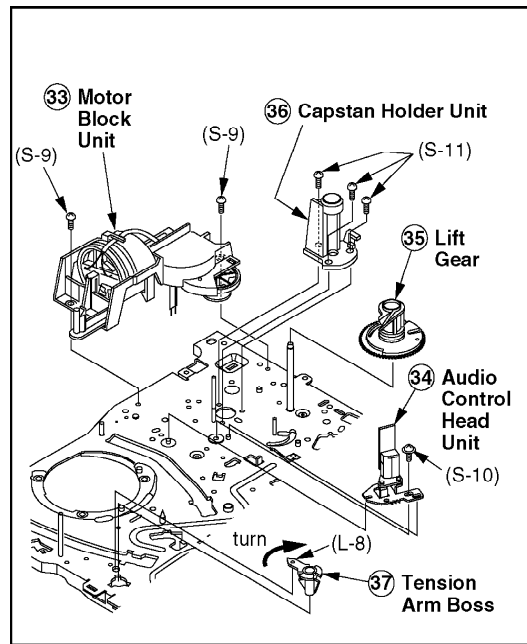
A. Install the Opener Piece so that the slot of the Opener Piece is inserted to the Pin of Pinch Arm Unit

Fig. J10-3



6.2.13. Motor Block Unit, Audio Control Head Unit, Lift Gear, Capstan Holder Unit, and Tension Arm Boss

Fig. J11



6.3. CASSETTE UP ASS'Y SECTION

This chart indicates Step/Location No. of Parts to be serviced and prior steps to gain access items to be serviced when disassembling. When reassembling, perform the step(s) in the reverse order.

Step/Location No.	Prior Step(s)	Part	Fig. No.	Remove	Alignment/Adjustment
①	-----	Top Plate	K1-1	(L-1), (L-2)	
②	1	Wiper Arm Unit	K1-1	2(L-3)	Gear Alignment
③	1,2	Holder Unit	K1-1	-	
④	-----	Opener Lever	K2	2(L-4)	
⑤	1,2,3,4	Drive Rack Unit	K2	-	
↑ A ↑ B ↑ C ↑ D ↑ E ↑ F					

How to read chart shown above:

A: Order of Procedure steps.

When reassembling, perform steps(s) in reverse order.

These numbers are also used as the identification (location) No. of parts in Figures.

B: Steps to be completed prior to the current step.

C: Part to be removed or installed.

D: Fig. No. showing Procedure or Part Location.

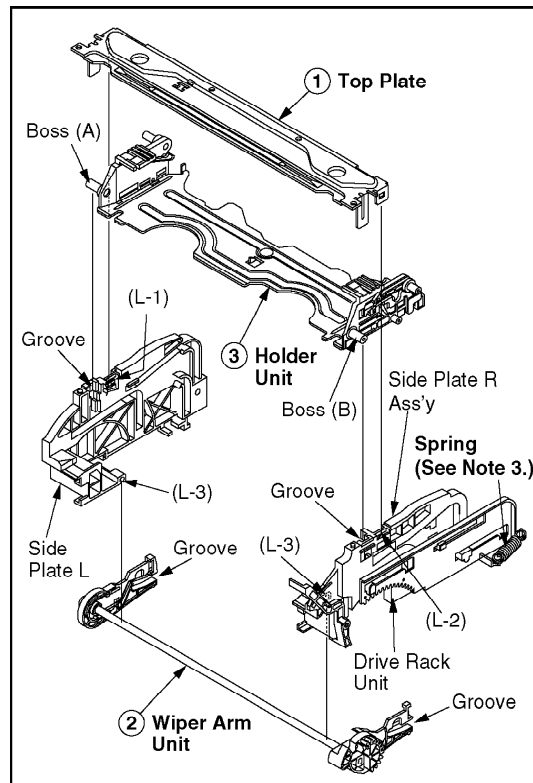
E: Identification of part to be removed, unhooked, unlocked, released, unplugged or unsoldered.

(S-1) = Screw (S-1), (L-1) = Locking Tab (L-1), (W-1) = Washer (W-1), (P-1) = Spring (P-1), (C-1) = Cut Washer (C-1)

F: Alignment/Adjustment which is required when installing or replacing each Parts.

6.3.1. Top Plate, Wiper Arm Unit, and Holder Unit

Fig. K1-1

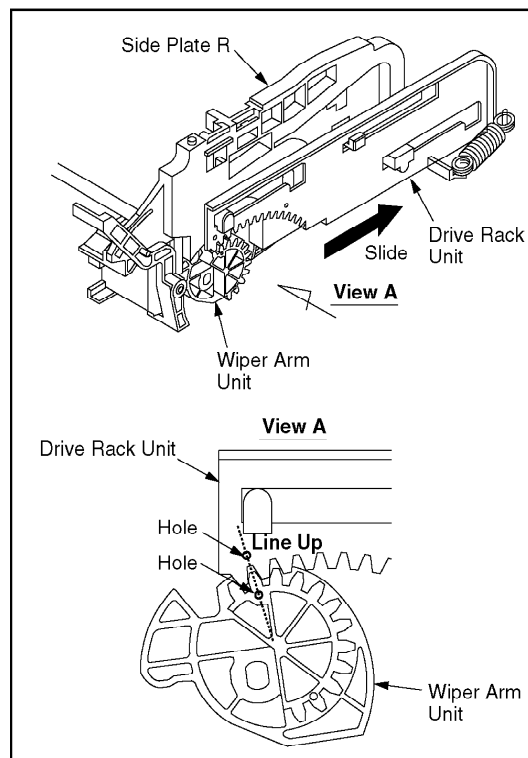


6.3.1.1. Reassembly Notes

1. Alignment of Wiper Arm Unit and Drive Rack Unit

- A. Slide the Drive Rack Unit to the far right as indicated by the arrow.
- B. Install the Wiper Arm Unit so that the hole on the Wiper Arm Unit is aligned with the hole on the Drive Rack Unit.

Fig. K1-2



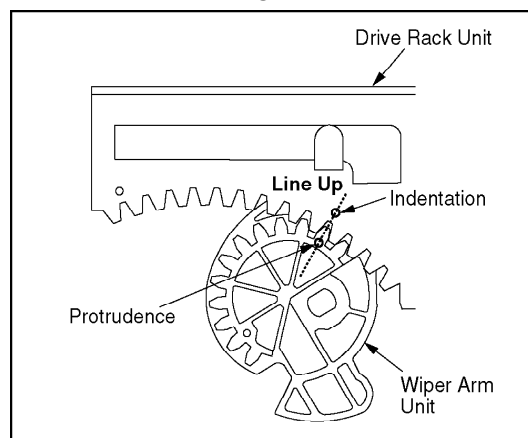
2. Installation of Holder Unit

A. Turn the Wiper Arm Unit so that the grooves on each end are aligned with the each groove on Side Plate L and R.

B. Insert Holder Unit boss (A) and (B) into the grooves as shown in Fig. K1-1.

C. Finally, in the EJECT Position, confirm that the protrudence on the Wiper Arm Unit is aligned with the indentation on the Drive Rack Unit.

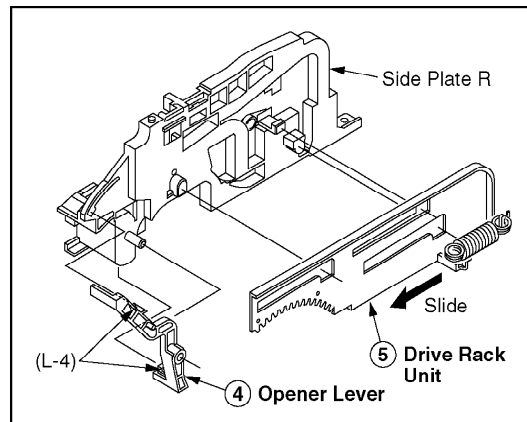
Fig. K1-3



3. Make sure to hook the spring to the Drive Rack Arm of Mechanism chassis.

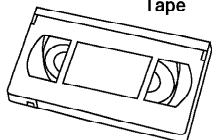
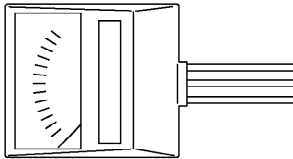
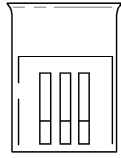
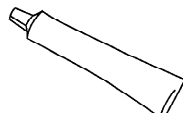
6.3.2. Opener Lever and Drive Rack Unit

Fig. K2



7. ADJUSTMENT PROCEDURES

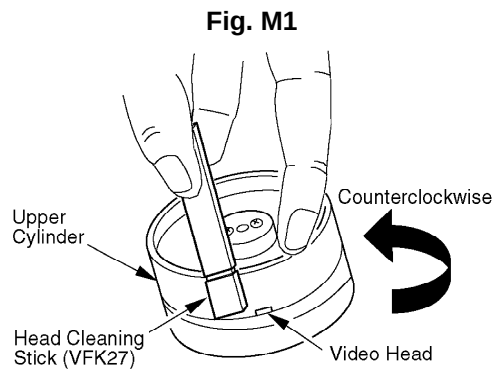
7.1. SERVICE FIXTURES AND TOOLS

VFMS0003H6 VHS Alignment Tape  <table><tr><td>Video</td><td>Color Bar & Monoscope</td></tr><tr><td>Audio</td><td>6kHz(MONO)</td></tr></table>	Video	Color Bar & Monoscope	Audio	6kHz(MONO)	Back Tension Meter (Made in USA., Purchase Locally) 	VFK27 Head Cleaning Stick 
Video	Color Bar & Monoscope					
Audio	6kHz(MONO)					
VFK1301 Silicon Grease 	VFKS0081 Grease 	VFK0329 Post Adjustment Driver 				
VFK0330 H-Position Adjustment Driver 						

7.2. MECHANICAL ADJUSTMENT

7.2.1. CLEANING PROCEDURE FOR THE UPPER CYLINDER UNIT

1. While slowly turning the Upper Cylinder Unit counterclockwise by hand, gently rub the Video Heads with a Head Cleaning Stick (VFK27) moistened with Ethanol.
When using a Cleaning Cassette, make sure to use "DRY" type only and be aware that excessive use can shorten head life.



Note:

1. Do not rub vertically or apply excess pressure to the Video Heads. Do not turn the Upper Cylinder Unit clockwise while cleaning.
2. After cleaning, use a Dry Head Cleaning Stick (VFK27) to remove any Ethanol remaining on the cylinder tape path. Otherwise, tape damage will occur.

7.2.2. ADJUSTMENT PROCEDURES

7.2.2.1. BACK TENSION CONFIRMATION

Purpose:

To fine adjust the Back Tension so that the tape runs smoothly with a constant tension.

Symptom of Misadjustment:

- 1) If the tape tension is less than the specified value, the tape cannot come into proper contact with the Video Heads, resulting in poor picture playback.
- 2) If the tape tension is too high, the tape will soon be damaged.

Equipment Required:

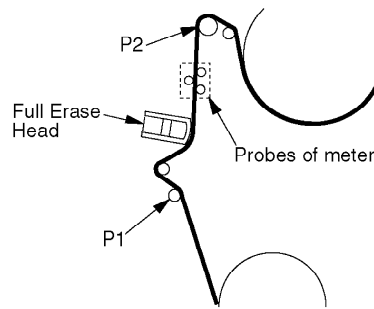
Back Tension Meter (Made in U.S.A., Purchase Locally)
VHS Cassette Tape (120-Minute Tape)

Specification:

20 gf $\pm$ 2.5 gf
(0.196 N $\pm$ 0.025 N)

1. Play back a T120 cassette tape from the beginning for approx. 10 to 20 seconds to stabilize tape movement.
2. Insert a Tension Meter into tape path and measure the back tension.

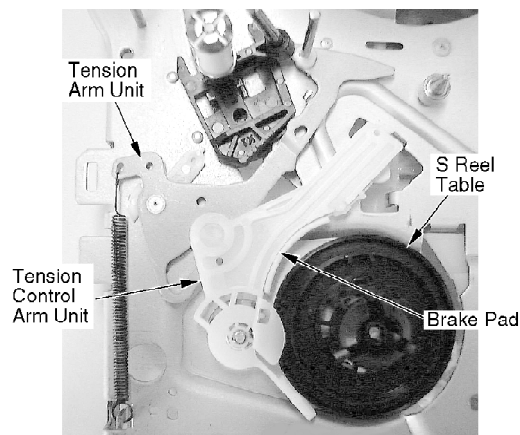
Fig. M2-1



3. If the reading is out of specification, make sure that there is no dust or foreign material between the Brake Pad of Tension Control Arm Unit and the S Reel Table.

After cleaning, the reading of tension measurement is still out of specification, replace the Tension Arm Unit and the Tension Control Arm Unit.

Fig. M2-2



Note:

1. Be sure that the three probes of the meter are all in solid contact with the tape, but not touching any other parts of the mechanism.
2. It is recommended that measurements should be repeated at least three (3) times because the tension meter is very sensitive to external vibrations.

7.2.2.2. MR HEAD GAP ADJUSTMENT

Purpose:

To properly pick up the FG Signal.

Symptom of Misadjustment:

If the FG Signal is not properly picked up, Servo Operation cannot

be achieved.

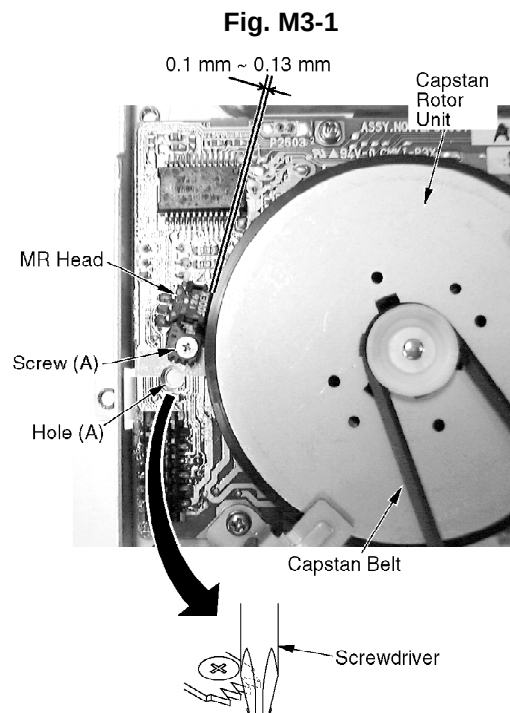
Equipment Required:

Oscilloscope

Specification:

0.1 mm ~ 0.13 mm

1. Remove the VCR Chassis Unit and then place it upside down.
2. Remove the Main C.B.A.
3. Slightly loosen Screw (A). Then set the Screwdriver (Phillips Driver) into the Hole (A). Turn the screwdriver clockwise until the MR Head touches the rotor. Then turn it slightly counterclockwise to make the clearance as specified.
4. Tighten Screw (A).
5. Reinstall the Main C.B.A.



Note:

Do not touch the outside circumference of the rotor surface with any tool and keep magnetic material away from the rotor magnet (especially metal particles).

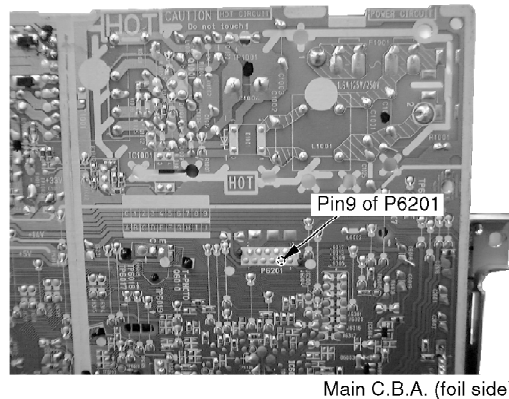
Confirmation of Signal Level

1. Place the unit in Service Position (2). Refer to "**SERVICE POSITION**"

" in SERVICE NOTES.

2. Supply a Video Signal to the video input jack.
3. Insert a cassette tape and place the unit in SLP recording mode.
4. Connect the oscilloscope to Pin 9 of P6201 on the Main C.B.A.
Confirm that the signal level is greater than 20 mV [P-P].

Fig. M3-2



7.2.2.3. TAPE INTERCHANGEABILITY ADJUSTMENT

Note:

To perform these adjustment/confirmation procedures, enter the Tracking center mode.

Equipment Required:

- Dual Trace Oscilloscope
- VHS Alignment Tape (VFMS0003H6)
- Post Adjustment Driver (VFK0329)
- H-Position Adjustment Driver (VFK0330)

7.2.2.3.1. ENVELOPE OUTPUT ADJUSTMENT

The height of the P2 and P3 Posts replacement part is preadjust at the factory.

Purpose:

To achieve a satisfactory picture and secure precise tracking.

Symptom of Misadjustment:

If the envelope is output poorly, much noise will appear in the picture. Then the tracking will lose precision and the playback picture will be distorted by any slight variation of the tracking control circuit.

Equipment Required:

- Post Adjustment Driver (VFK0329)

1. Insert the alignment tape.
2. Press and hold VCR/TV button and CH DOWN buttons on VCR together over 5 seconds in power off condition.
The power comes on and the unit goes into service mode.
3. Play back the alignment tape.
4. To enter Tracking center mode, press PLAY button in Play back mode. "TRACKING CENTER" will be displayed on the TV monitor.
5. Connect the oscilloscope to TP3002 on the Video Signal Process Section of the Main C.B.A. Use TP6205 as a trigger.
6. Confirm that the RF envelope is flat enough ($V_1/V\text{-max.}$ is 0.7 or more). If not, with Post Adjustment Driver, adjust P2 and P3 post height so that the envelope waveform becomes as flat ($V_1/V\text{-max.}$ is 0.7 or more) as possible (No envelope drop). If the envelope drop appears on the left-half of the waveform, adjust P2 post height. If the envelope drop appears on the right-half of the waveform, adjust P3 post height.

CAUTION:

Overtightening P2 and P3 posts may cause the threads to strip.

Note:

It will be possible to confirm Step 6 according to following steps.

1. Release the Tracking center mode.
2. Press the Tracking Control Up or Down button on remote control.
Make sure that the envelope waveform remains flat. If not, readjust P2 and/or P3 post heights.

Fig. M4-1

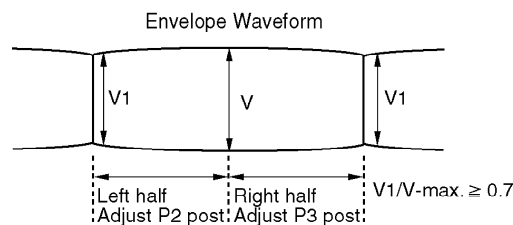
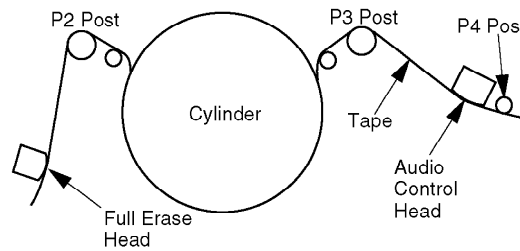
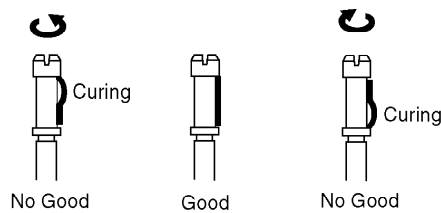


Fig. M4-2



- 7. After adjustment, confirm that the tape travels without curling at P2 and P3 posts.**

Fig. M4-3



- 8. To release from Tracking center mode, press PLAY or STOP button.**

7.2.2.3.2. AUDIO CONTROL HEAD TILT ADJUSTMENT

Purpose:

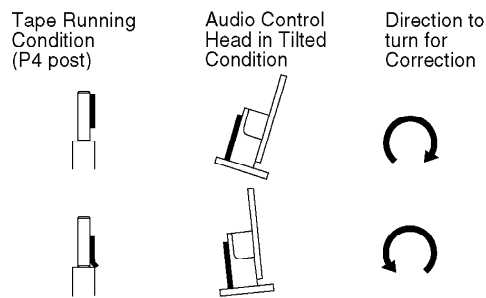
To confirm that the tape runs smoothly. In particular, confirm that the tape properly picks up the Audio Signal at the upper part of the head and the Control Signal at the lower part of the head.

Symptom of Misadjustment:

If the tilt of the Audio Control Head is poorly adjusted, the tape will eventually be damaged. An intermittent Blue screen may be seen in Playback.

- 1. Play back a T120 cassette tape and check that the tape travels smoothly between the upper and lower guides of the P4 post.**
- 2. If necessary, adjust Black Screw (B) clockwise until the tape begins to curl at the lower edge of the P4 post. Then adjust the screw counterclockwise until the curling is eliminated.**

Fig. M5



7.2.2.3.3. AUDIO CONTROL HEAD HEIGHT ADJUSTMENT

The height of the Audio Control Head replacement part is preset at the factory.

Purpose:

To be sure the tape runs properly along the Control Head.

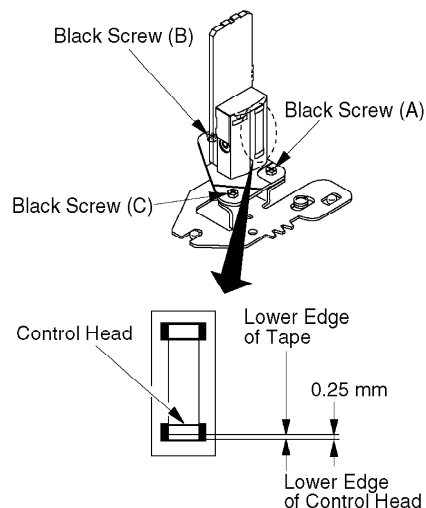
Symptom of Misadjustment:

If the control signal is not properly picked up, Servo Operation cannot be achieved. A Blue screen will be seen in Playback.

This confirmation is required when the Audio Control Head is replaced.

1. Play back a T120 cassette tape and check that the lower edge of the tape runs approximately 0.25 mm above the lower edge of the Audio Control Head.
2. If necessary, adjust Black Screws (A) and (B) clockwise to lower the tape or counterclockwise to raise.

Fig. M6



7.2.2.3.4. AUDIO CONTROL HEAD AZIMUTH ADJUSTMENT

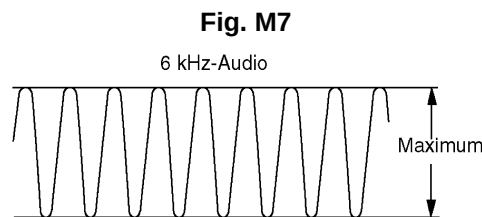
Purpose:

To adjust the position and height of the Audio Control Head so that it meets the tape tracks properly.

Symptom of Misadjustment:

If the position of the Audio Control Head is not properly adjusted, the Audio S/N Ratio is poor.

1. Connect the oscilloscope to the audio output jack on the rear side of the deck.
2. Play back the 6 kHz Monaural Audio portion of the alignment tape.
3. Adjust Black Screw (C) on the Audio Control Head base so that the output level is at maximum.



4. Confirm the height of the Audio Control Head is proper. If not, readjust Black Screws (A) and (B).

7.2.2.3.5. AUDIO CONTROL HEAD HORIZONTAL POSITION ADJUSTMENT

Purpose:

To adjust the Horizontal Position of the Audio Control Head.

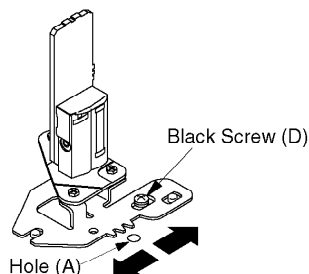
Symptom of Misadjustment:

If the Horizontal Position of the Audio Control Head is not properly adjusted, a maximum envelope cannot be obtained at the Neutral Position of the Tracking Control Circuit.

1. Insert the alignment tape.
2. Press and hold VCR/TV button and CH DOWN buttons on VCR together over 5 seconds in power off condition.
The power comes on and the unit goes into service mode.
3. Play back the alignment tape.
4. To enter Tracking center mode, press PLAY button in Play back mode. "TRACKING CENTER" will be displayed on the TV monitor.
5. Connect the oscilloscope to TP3002 on the Video Signal Process Section of the Main C.B.A. Use TP6205 as a trigger.
6. Loosen the Black Screw (D) and tighten it slightly. Set the H-Position Adjustment Driver into the Hole (A). Then slowly turn the

fixture either clockwise or counterclockwise so that the envelope is at maximum.

Fig. M8



7. Tighten Black Screw (D).

8. To release from Tracking center mode, press PLAY or STOP button.

Note:

Old type of H-Position Adjustment Driver (VFK0136) can be used for this adjustment.

7.3. ELECTRICAL ADJUSTMENT

7.3.1. EVR (Electronic Variable Resister) ADJUSTMENT WITH THE REMOTE CONTROL

This unit has electronic technology using I2C Bus concept. The PG SHIFTER ADJUSTMENT is adjusted by using " On Screen Display " and the remote control instead of adjusting mechanical controls (VR).

7.3.2. TEST EQUIPMENT

To do all of these electrical adjustments, the following equipment is required.

1. Dual-Trace Oscilloscope

Voltage Range: 0.001 V to 50 V/Div.

Frequency Range: DC to 50 MHz

Probes: 10:1, 1:1

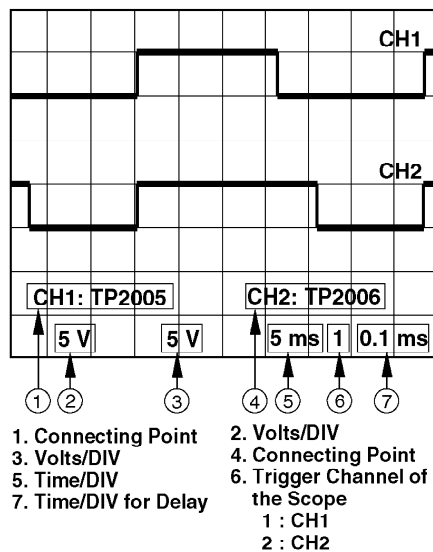
2. Isolation Transformer (Variable)

3. VHS Alignment Tape (VFMS0003H6)

4. TV monitor

7.3.3. HOW TO READ THE ADJUSTMENT PROCEDURES

Fig.E1



7.3.4. PG SHIFTER ADJUSTMENT

Purpose:

Determine the Video Head Switching Point during Playback.

Symptom of Misadjustment:

May cause Head Switching Noise and/or Vertical Jitter.

Test Point :

TP3001 (Main C.B.A.),
TP6205 (Main C.B.A.)

Specification:

$T = 6 H \pm 0.5 H$ (0.38 ms $\pm$ 0.03 ms) Mode : SP Playback

Mode :

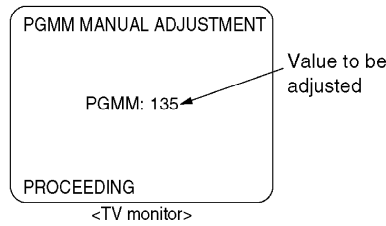
SP Playback

Equipment :

Oscilloscope,
VHS Alignment Tape (VFMS0003H6),
TV monitor

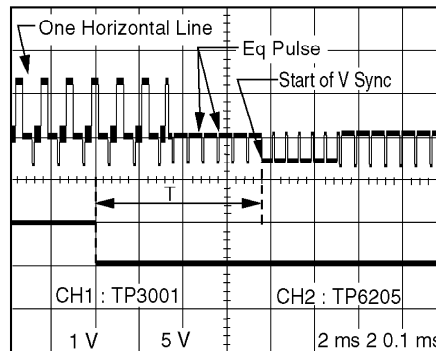
1. Insert the VHS Alignment Tape and play back in SP mode.
2. Press VCR/TV button on the unit and 3 button on the remote control together to enter EVR PG SHIFTER ADJUSTMENT Mode. Then, "PGMM MANUAL ADJUSTMENT" menu will appear on the TV monitor.

Fig.E2-1



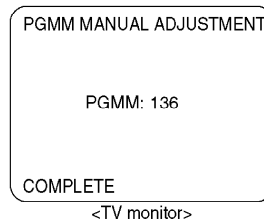
3. Connect the channel-1 scope probe to TP3001 and the channel-2 scope probe to TP6205. Used TP6205 as a trigger.
4. Adjust value so that the trailing edge of the head switching pulse is placed $6 H \pm 0.5 H$ ($0.38 \text{ ms} \pm 0.03 \text{ ms}$) before the start of the vertical sync pulse by pressing CH UP and CH DOWN buttons on the remote control.

Fig.E2-2



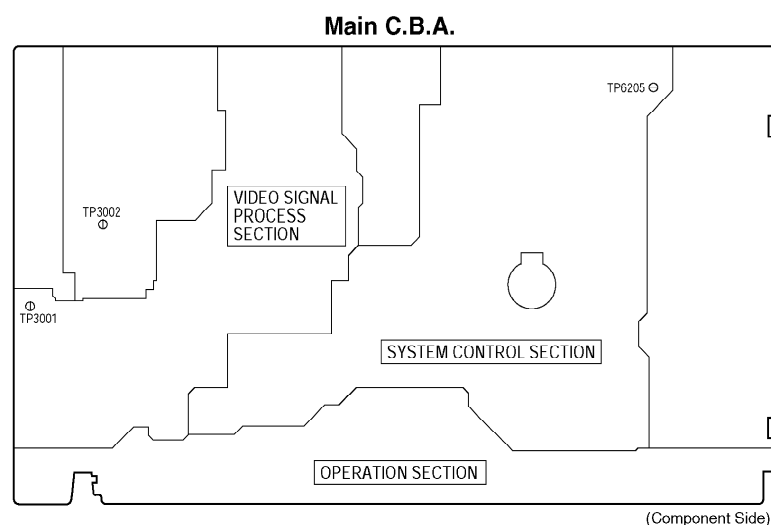
5. After adjustment is completed, press REC button on the remote control. Then " COMPLETE " will appear on the TV monitor and adjusted value will be written to Memory IC (IC6005).

Fig.E2-3



6. Press STOP button on the remote control to release from EVR PG SHIFTER ADJUSTMENT MODE.

7.4. TEST POINTS AND CONTROL LOCATION



FUNCTION OF IMPORTANT TEST POINTS	
TP3001	Video Signal to Jack
TP3002	REC/PB Video envelope signal
TP6205	Head SW.

Test Point Information

⊕ Test Point with a jumper wire across a hole in the P.C.B.

8. SCHEMATIC DIAGRAMS

8.1. SCHEMATIC DIAGRAM & CIRCUIT BOARD LAYOUT NOTES

8.2. MAIN SCHEMATIC DIAGRAMS

(Model: PV-V4621, PV-V4661-K)

(Model: PV-V4621-K)

8.3. OPERATION SCHEMATIC DIAGRAM

(Model: PV-V4621, PV-V4661-K)

8.4. CAPSTAN STATOR SCHEMATIC DIAGRAM

8.5. INTERCONNECTION SCHEMATIC DIAGRAM

8.6. SIGNAL WAVEFORMS

8.7. VOLTAGE CHART

9. CIRCUIT BOARD LAYOUT

9.1. MAIN C.B.A.

(Model: PV-V4621, PV-V4661-K)

(Model: PV-V4621-K)

9.2. OPERATION C.B.A.

(Model: PV-V4621, PV-V4661-K)

9.3. CAPSTAN STATOR C.B.A.

10. BLOCK DIAGRAMS

10.1. POWER SUPPLY BLOCK DIAGRAM

10.2. VIDEO SIGNAL PATH BLOCK DIAGRAM

10.3. AUDIO SIGNAL PROCESS BLOCK DIAGRAM

10.4. Hi-Fi AUDIO SIGNAL PATH BLOCK DIAGRAM

10.5. SYSTEM CONTROL BLOCK DIAGRAM

10.6. SERVO BLOCK DIAGRAM

10.7. OPERATION BLOCK DIAGRAM

10.8. ADVANCE BLOCK DIAGRAM

11. EXPLODED VIEWS

11.1. MECHANISM (TOP) SECTION

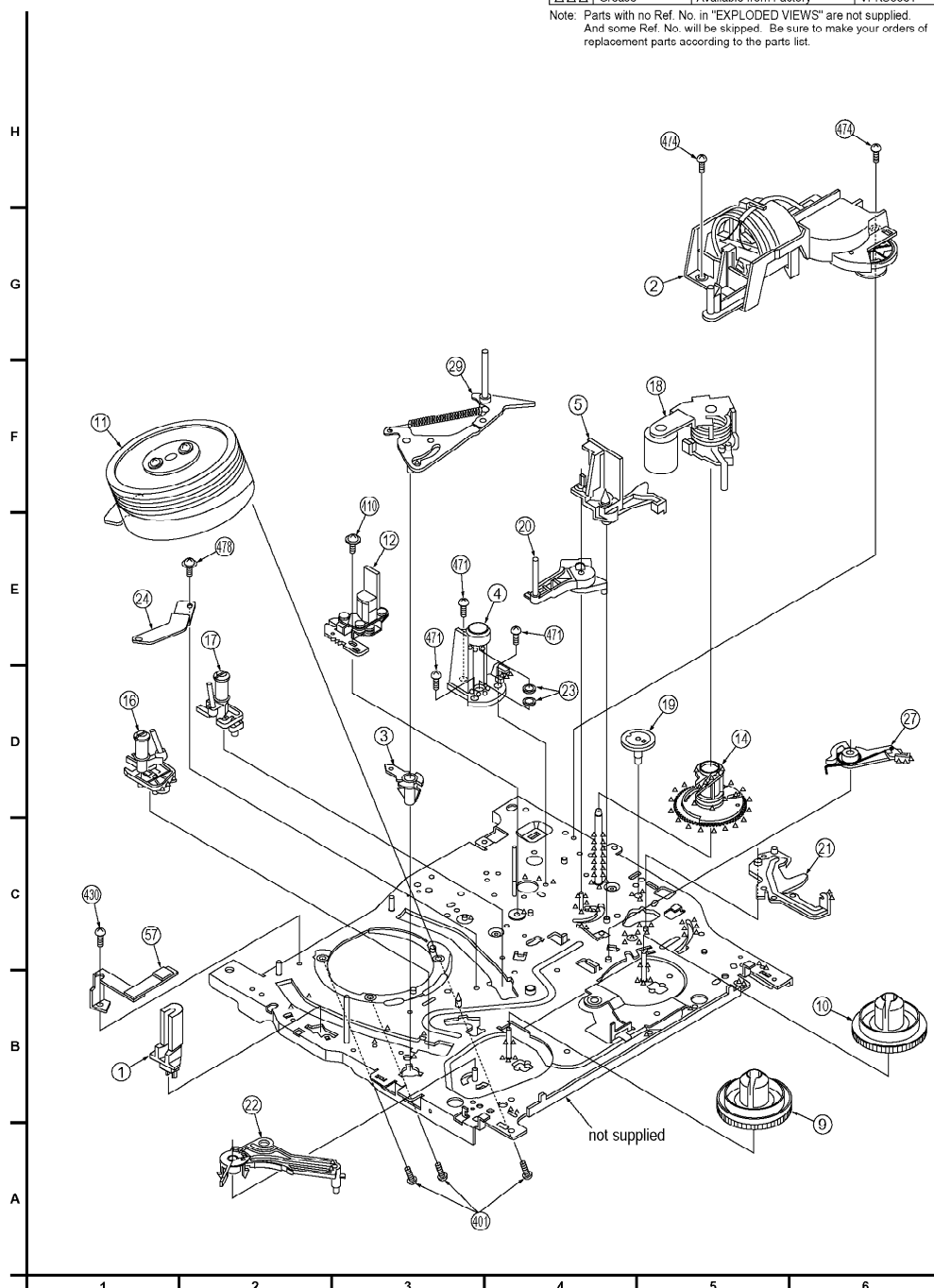
1 MECHANISM (TOP) SECTION

LUBRICATION POINTS

When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

Mark	Kind of Lubricant	Availability	Part Number
○○○	Spindle Oil	Purchase from Local Supplier	-----
△△△	Grease	Available from Factory	VFKS0081

Note: Parts with no Ref. No. in "EXPLODED VIEWS" are not supplied.
And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.



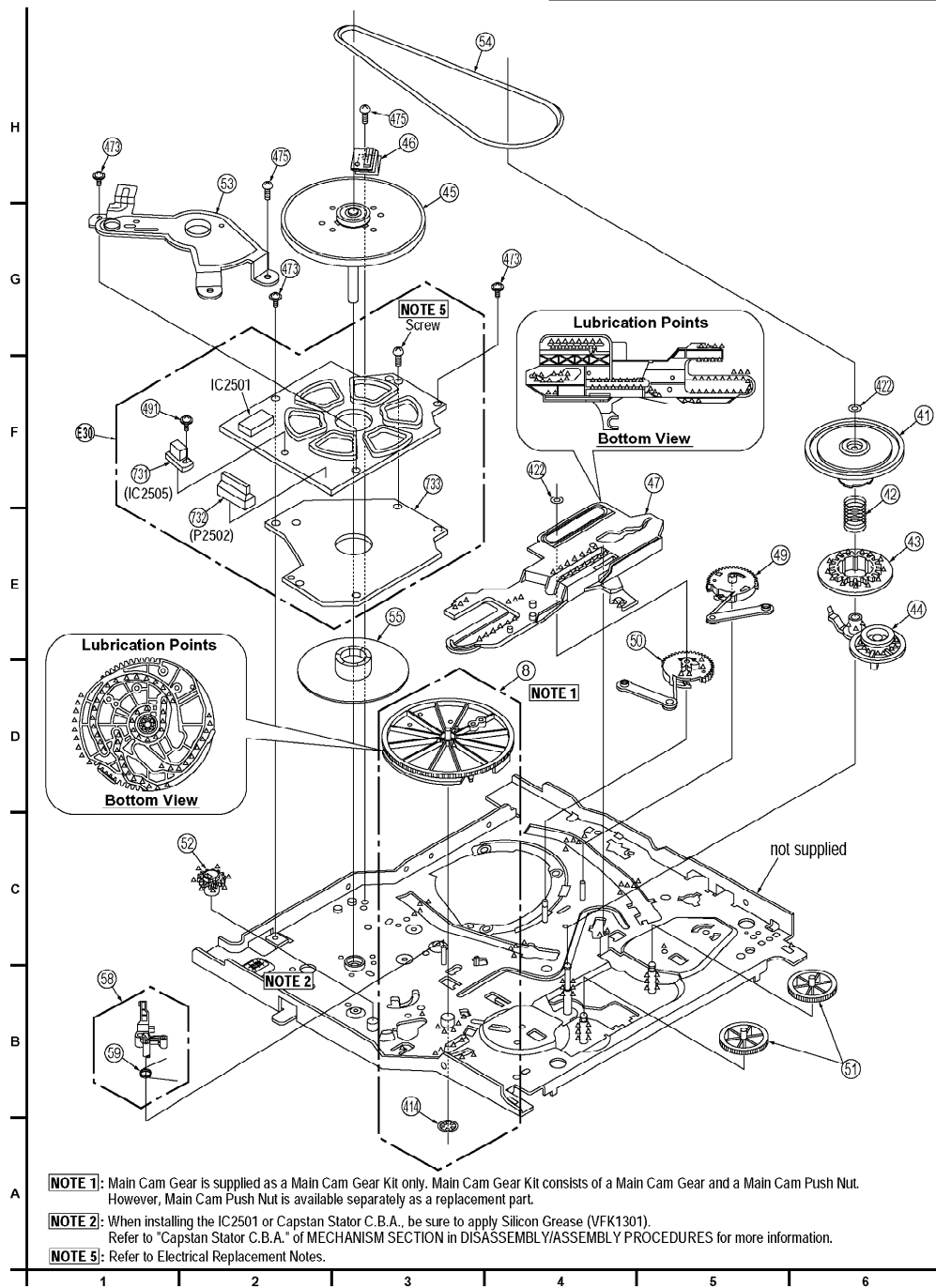
11.2. MECHANISM (BOTTOM) SECTION

② MECHANISM (BOTTOM) SECTION

LUBRICATION POINTS

When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

Mark	Kind of Lubricant	Availability	Part Number
XXX	Silicon Grease	Available from Factory	VF-K1301
△△△	Grease	Available from Factory	VFKS0081



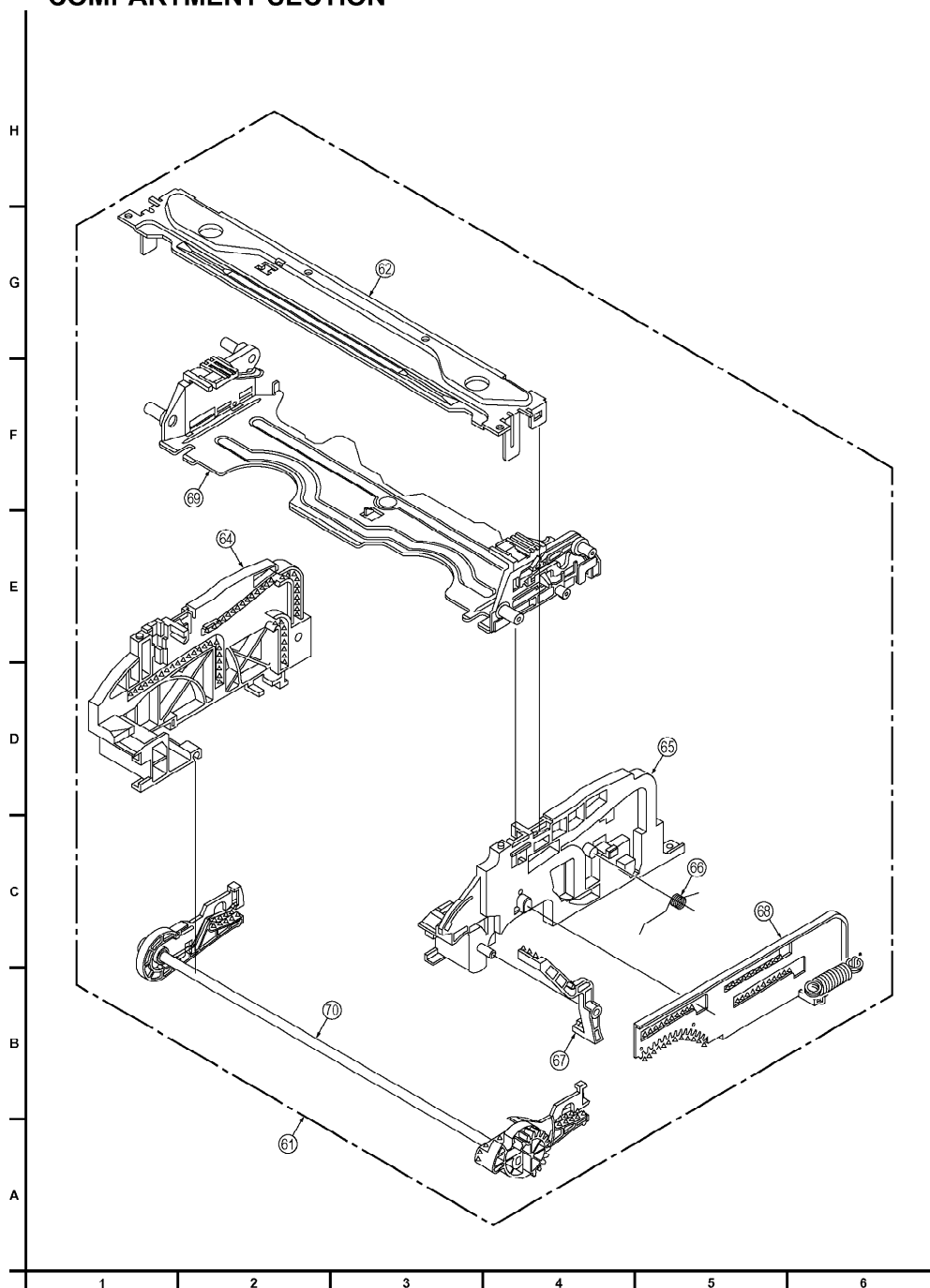
11.3. CASSETTE UP COMPARTMENT SECTION

③ CASSETTE UP COMPARTMENT SECTION

LUBRICATION POINTS

When the marked parts are replaced, apply the recommended lubricants or adhesive for better maintenance of the unit.

Mark	Kind of Lubricant	Availability	Part Number
△△△	Grease	Available from Factory	VFKS0081



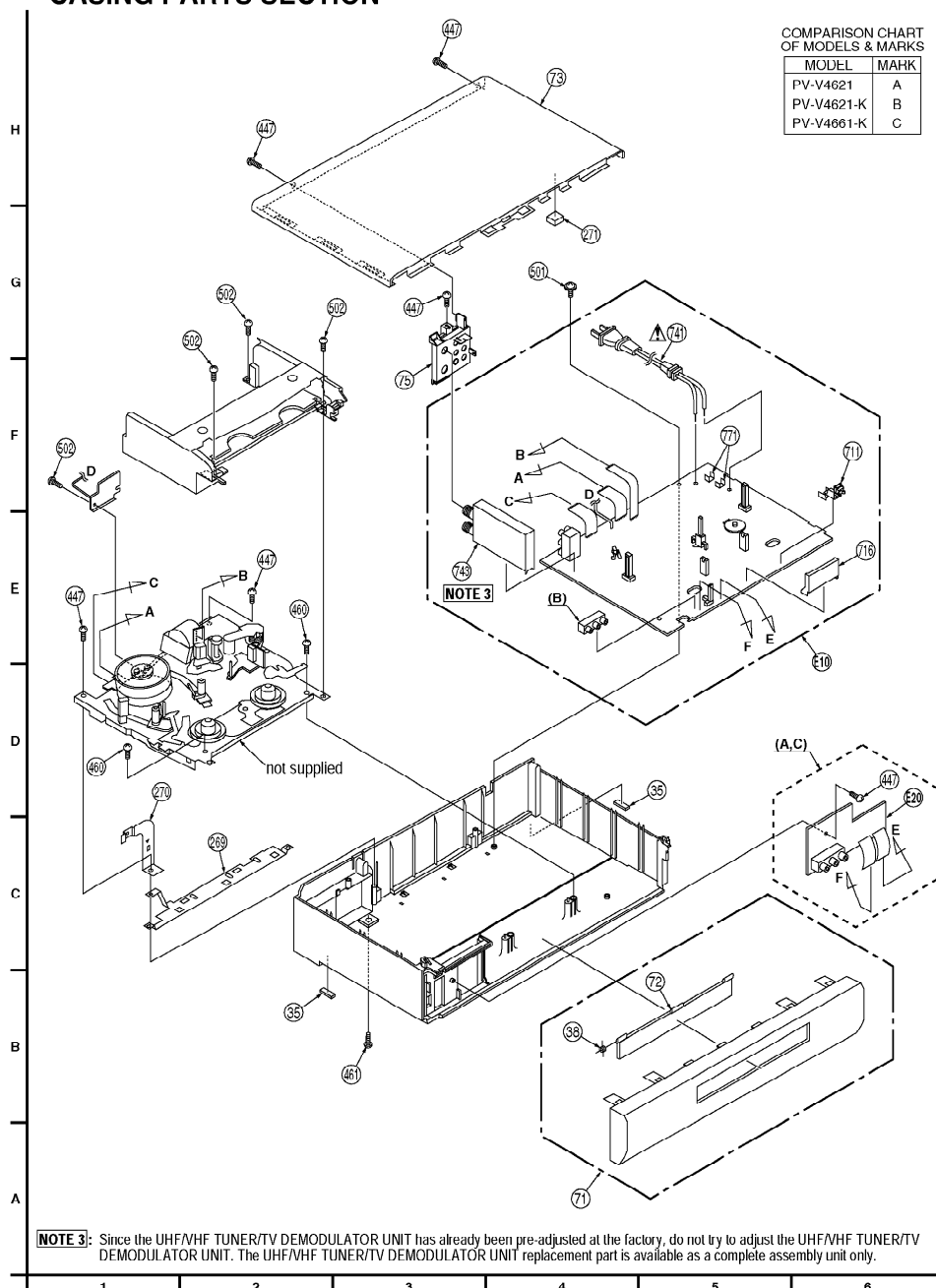
11.4. CHASSIS FRAME AND CASING PARTS SECTION

4 CHASSIS FRAME AND CASING PARTS SECTION

IMPORTANT SAFETY NOTICE
COMPONENTS IDENTIFIED BY THE SIGN  HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

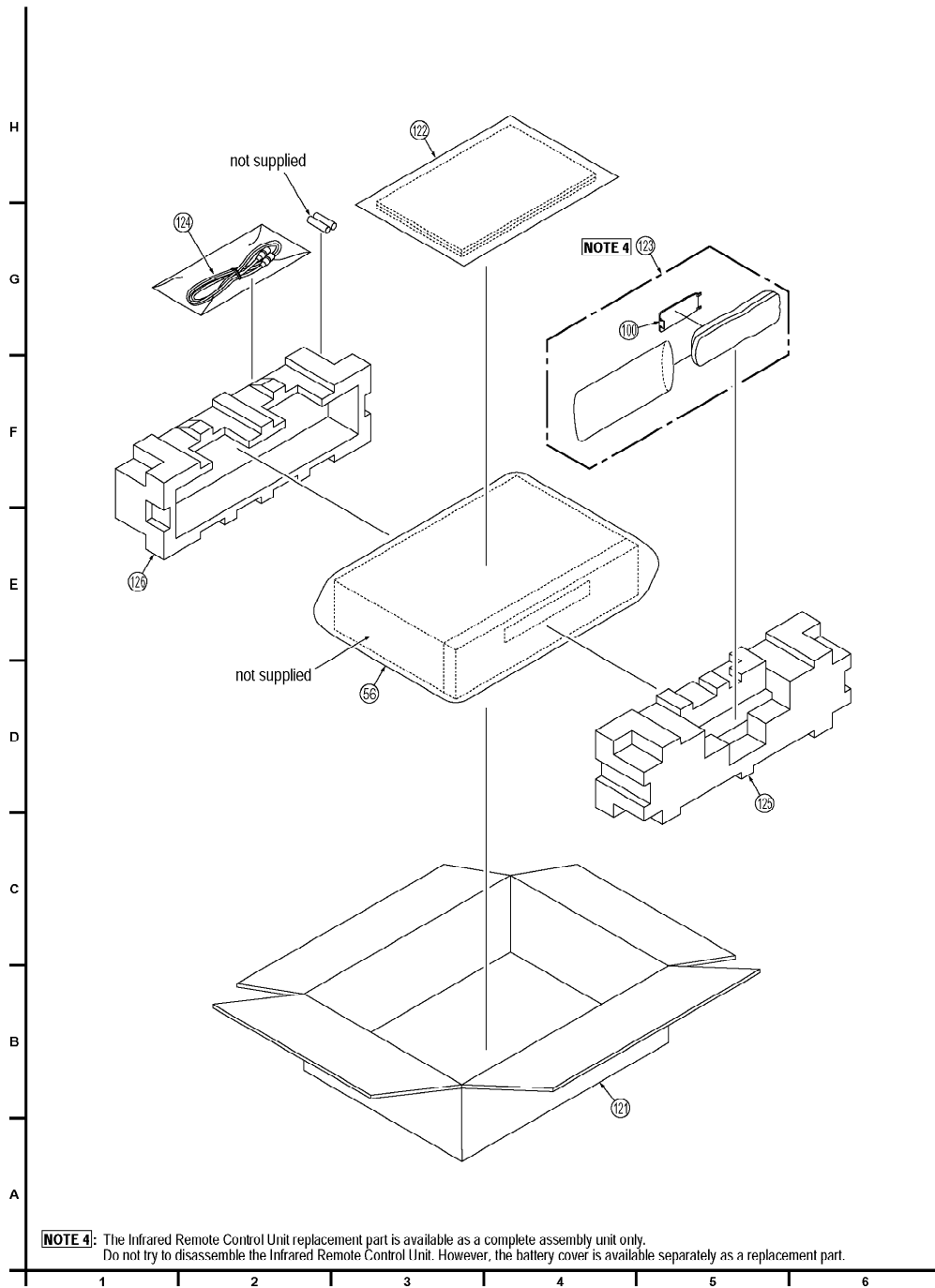
COMPARISON CHART OF MODELS & MARKS

MODEL	MAHK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C



11.5. PACKING PARTS AND ACCESSORIES SECTION

5 PACKING PARTS AND ACCESSORIES SECTION



12. REPLACEMENT PARTS LISTS

BEFORE REPLACING PARTS, READ THE FOLLOWING:

12.1. REPLACEMENT NOTES

12.1.1. General Notes

1. Use only original replacement parts:

To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list.

2. IMPORTANT SAFETY NOTICE

Components identified by the sign  have special characteristics important for safety. When replacing any of these components, use only the specified parts.

3. SPECIAL NOTE

All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" section of this service manual.

4. Parts with no Ref. No. in "EXPLODED VIEWS" are not supplied. And some Ref. No. will be skipped. Be sure to make your orders of replacement parts according to the parts list.
5. Parts different in shape or size may be used. However, only interchangeable parts will be supplied as service replacement parts.
6. All of parts are supplied from MKI.
7. Item numbers with capital letter E (Example: E10, E20,...) in the Ref. No. column are shown in the exploded views.
8. Parts whose Ref. Nos. are the same are interchangeable as replacement parts. Any of these parts may be ordered and used as a replacement part.

12.1.2. Mechanical Replacement Notes

1. Section No. of parts shown in Exploded Views are indicated in the Remarks column.
2. Main Cam Gear is supplied as a Main Cam Gear Kit (Ref. No. 8) only. Main Cam Gear Kit consists of a Main Cam Gear and a Main Cam Push Nut. However, Main Cam Push Nut is available separately as a replacement part.
3. The Infrared Remote Control Unit (Ref. No. 123) replacement part is available as a complete assembly unit only. Do not try to

disassemble the Infrared Remote Control Unit. However, the battery cover is available separately as a replacement part.

4. Main Cam Push Nut (Ref. No. 414) is not reusable.
If removed, install a new one.

12.1.3. Electrical Replacement Notes

1. Unless otherwise specified;
All resistors are in Ω , K = 1,000 Ω , M = 1,000 k Ω .

2. Abbreviation

RTL:

Retention Time Limited

This indicates that the retention time is limited for this item. After the discontinuation of this item in production, it will no longer be available.

NR:

Non Repairable Board Ass'y

MGF CHIP:

Metal Glaze Film Chip

C CHIP:

Ceramic Chip

COMPLX CMP:

Complex Component

W FLMPRF:

Wirewound Flameproof

C.B.A.:

Circuit Board Assembly

P.C.B.:

Printed Circuit Board

E.S.D.:

Electrostatically Sensitive Devices

3. SERVICE OF CHIP PARTS

When servicing chip parts, please use a soldering iron of less than 30 W. Refer to "[IC, TRANSISTOR AND CHIP PART INFORMATION](#)" page.

4. When replacing 0 Ω resistor, a wire can be substituted for it.
5. When installing the IC2501 (AN3846SC) or Capstan Stator C.B.A., be sure to apply Silicon Grease (VFK1301). Refer to "Capstan Stator C.B.A." of MECHANISM SECTION in DISASSEMBLY/ASSEMBLY PROCEDURES.
6. Since the UHF/VHF TUNER/TV DEMODULATOR UNIT (Ref. No. 743) has already been pre-adjusted at the factory, do not try to adjust the UHF/VHF TUNER/TV DEMODULATOR UNIT. The UHF/VHF TUNER/TV DEMODULATOR UNIT replacement part is available as a complete assembly unit only.
7. EEPROM IC (IC6005), Main C.B.A. replacement note:
After replacing EEPROM IC (IC6005) or Main C.B.A., be sure to perform the "PG SHIFTER ADJUSTMENT" in ELECTRICAL ADJUSTMENT procedures.
8. The Capstan Stator C.B.A. (Ref. No. E30) as a service part is supplied with the Screw installed on it. Please note that there is no functional difference between the units with or without the Screw.
9. PV-V4621 replacement note:
There are 2 types of Main C.B.A. (E10) for PV-V4621.
VEPS6073HA is used in early products and has been changed to VEPS6073HC on running change basis in later products. When replacing Microcontroller IC (IC6001) or EEP ROM IC (IC6005), be sure to confirm which Main C.B.A. is used for the unit you are servicing.
The parts used for each Main C.B.A. are as follows.

Main C.B.A. (E10)	Microcontroller IC (IC6001)	EEP ROM IC (IC6005)
VEPS6073HA	MN101D02HPJ	LSUQ0030
VEPS6073HC	MN101D02HPJ1	KS24C011CS or AT24C01A10SI or BR24C01AF-E2 or BR24C01AFWE2 or KS24C011IS or M24C01-MN6

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C

12.2. MECHANICAL REPLACEMENT PARTS LISTS

MECHANICAL REPLACEMENT PARTS

Ref. No.	Part No.	Part Name & Description	Remarks
1	VBSS0033	FULL ERASE HEAD	1
2	VXKS0901	MOTOR BLOCK UNIT	1
3	LSDB0045	TENSION ARM BOSS	1
4	VXDS0212	CAPSTAN HOLDER UNIT	1
5	LSMD0209	OPENER PIECE	1
8	VVGS0009	MAIN CAM GEAR KIT	2
9	LSDR0006	S REEL TABLE	1
10	LSDR0007	T REEL TABLE	1
11	VEGS0455	CYLINDER UNIT (A,B)	1
11	VEGS0456	CYLINDER UNIT (C)	1
12	VEHS0596	AUDIO CONTROL/ERASE HEAD UNIT	1
14	LSDG0112	LIFT GEAR	1
16	VXDS0213	LOADING POST BASE-S UNIT	1
17	VXDS0214	LOADING POST BASE-T UNIT	1
18	VXLS1094	PINCH ARM UNIT	1
19	LSDG0110	INTERMEDIATE GEAR A	1
20	VXLS1101	P5 ARM UNIT	1
21	LSML0131	DRIVE RACK ARM	1
22	VXLS1127	TENSION CONTROL ARM UNIT	1
23	LSMX0129	OIL SEAL	1
24	LSMA0434	REGULATOR ANGLE	1
27	VXLS1130	T BRAKE ARM UNIT	1
29	VXLS1129	TENSION ARM UNIT	1
35	LSKA0012	RUBBER FOOT	4
38	LSMB0217	CASSETTE DOOR SPRING	4
41	VXPS0389	CENTER CLUTCH UNIT	2
42	VMBS1151	CHANGING GEAR SPRING	2
43	LSDG0132	CHANGING GEAR	2
44	VXLS1133	IDLER ARM UNIT	2
45	VXPS0393	CAPSTAN ROTOR UNIT	2
46	LSMA0387	STOPPER ANGLE	2
47	LSMM0003	MAIN ROD	2
49	VXLS1099	S LOADING ARM UNIT	2
50	VXLS1098	T LOADING ARM UNIT	2
51	LSDG0134	REEL GEAR	2
52	LSDG0111	INTERMEDIATE GEAR B	2
53	LSMA0423	SUPPORT ANGLE	2
54	LSDV0008	CAPSTAN BELT SQUARE,RUBBER 2MM	2
55	VXPS0392	SUB ROTOR UNIT	2
56	LSPF0056	SHEET,POLYETHYLENE	5
57	VXSS0010	GROUNDING PLATE UNIT	1
58	VXLS1105	SS BRAKE ARM UNIT	2
59	LSMB0196	SS BRAKE SPRING	2
61	VXYS1347	CASSETTE UP ASS'Y	3

Ref. No.	Part No.	Part Name & Description	Remarks
62	LSMA0352	TOP PLATE	3
64	LSMD0174	SIDE PLATE L	3
65	LSMD0173	SIDE PLATE R	3
66	LSMB0218	SUPPORT SPRING	3
67	LSML0096	OPENER LEVER	3
68	VXLS1111	DRIVE RACK UNIT	3
69	VXAS4423	HOLDER UNIT	3
70	VXLS1110	WIPER ARM UNIT	3
71	VYPS7088	FRONT PANEL ASS'Y (A)	4
71	VYPS7098	FRONT PANEL ASS'Y (B)	4
71	VYPS7092	FRONT PANEL ASS'Y (C)	4
72	VYPS7089	CASSETTE DOOR-LID UNIT (A)	4
72	VYPS7085	CASSETTE DOOR-LID UNIT (B)	4
72	VYPS7100	CASSETTE DOOR-LID UNIT (C)	4
73	LSKM0579	TOP COVER (A,C)	4
73	LSKM0559	TOP COVER (B)	4
75	LSGP0243	REAR PANEL	4
100	LSKF0369	BATTERY COVER (A)	5
100	LSKF0310	BATTERY COVER (B,C)	5
121	LSPG1143	PACKING CASE,PAPER (A)	5
121	LSPG1105	PACKING CASE,PAPER (B)	5
121	LSPG1106	PACKING CASE,PAPER (C)	5
122	LSQF0368	FAN BAG (A)	5
122	LSQF0386	FAN BAG (B)	5
122	LSQF0387	FAN BAG (C)	5
123	LSSQ0287	INFRARED REMOTE CONTROL UNIT (A)	5
123	LSSQ0292	INFRARED REMOTE CONTROL UNIT (B,C)	5
124	LSJA0372	VHF CONNECTING CABLE W/PLUG, 0V	5
124	LSJA0328	VHF CONNECTING CABLE W/PLUG, 0V	5
124	LSJA0274	VHF CONNECTING CABLE W/PLUG, 0V	5
124	VJAS0212	VHF CONNECTING CABLE W/PLUG, 0V	5
125	LSPN0169	FRONT CUSHION,STYROFOAM	5
126	LSPN0152	REAR CUSHION,STYROFOAM	5
269	LSSC0425	GROUNDING PLATE	4
270	LSSC0426	GROUNDING PLATE	4
271	LSGQ0041	CUSHION,PLASTIC	4
401	VHDS0475	SCREW,STEEL	1
410	VHDS0498	SCREW W/WASHER,STEEL	1
414	VHNS0070	MAIN CAM PUSH NUT,STEEL	2
422	XWGV2D5G	WASHER,NYLON	2
430	XTV26+6FFZJ	TAPPING SCREW,STEEL	1
447	VHDS0310	SCREW,STEEL	4
460	XTN4+12A	TAPPING SCREW,STEEL	4
461	VHDS0460	SCREW,STEEL	4
471	XSN26+5	SCREW,STEEL	1
473	XYN26+C6	SCREW W/WASHER,STEEL	2
474	LSHD0056	TAPPING SCREW,STEEL	1
475	XTV26+5FJ	TAPPING SCREW,STEEL	2
478	VHDS0495	SCREW,STEEL	1
491	XYN2+J7	SCREW W/WASHER,STEEL	2
501	LSHD0074	SCREW,STEEL	4
502	LSHD0075	TAPPING SCREW,STEEL	4
711	LSSZ0004	INFRARED RECEIVER UNIT	4
716	LSSZ0001	LED DISPLAY PANEL	4

Ref. No.	Part No.	Part Name & Description	Remarks
731(IC2505)	EZMPS300F12	MR HEAD	2
732(P2502)	LSJS0097	CONNEXOR 12P	2
733	LSMA0385	BACK PLATE,STEEL	2
741	LSJA0360	AC CORD W/PLUG,AC 125V	4
741	LSJA0358	AC CORD W/PLUG,AC 125V	4
741	LSJA0359	AC CORD W/PLUG,AC 125V	4
741	LSJA0361	AC CORD W/PLUG,AC 125V	4
743	ENG56717G1	TUNER,UHF/VHF NR	4
771	EYF52BC	FUSE HOLDER	4
E10	VEPS6073HA	MAIN C.B.A. (A)	4RTL
E10	VEPS6071HB	MAIN C.B.A. (B)	4RTL
E10	VEPS6073HB	MAIN C.B.A. (C)	4RTL
E20	VEPS8062A	OPERATION C.B.A. (A,C)	4RTL
E30	VEMS0344	CAPSTAN STATOR C.B.A. NR	2

SERVICE FIXTURES AND TOOLS

Ref. No.	Part No.	Part Name & Description	Remarks
	VFMS0003H6	VHS ALIGNMENT TAPE	
	VFKS0081	GREASE	
	VFK0329	POST ADJUSTMENT DRIVER	
	VFK1301	SILICON GREASE	
	VFK27	HEAD CLEANING STICK	
	VFK0330	H-POSITION ADJUSTMENT DRIVER	

12.3. ELECTRICAL REPLACEMENT PARTS LIST

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C

PRINTED CIRCUIT BOARD ASSEMBLY

Ref. No.	Part No.	Part Name & Description	Remarks
E10	VEPS6073HA	MAIN C.B.A. (A) / *See PV-V4621 Replacement Note	E.S.D. RTL
E10	VEPS6073HC	MAIN C.B.A. (A) / *See PV-V4621 Replacement Note	E.S.D. RTL
E10	VEPS6071HB	MAIN C.B.A. (B)	E.S.D. RTL
E10	VEPS6073HB	MAIN C.B.A. (C)	E.S.D. RTL
E20	VEPS8062A	OPERATION C.B.A. (A,C)	RTL
E30	VEMS0344	CAPSTAN STATOR C.B.A. NR	

12.3.1. MAIN C.B.A. (Model: A,C)

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name & Description	Remarks
IC1001	0N3131-R.KT	IC, LINEAR	⚠
IC1001	PS2501-1-X	IC, LINEAR	⚠
IC1001	0N3131-S.KT	IC, LINEAR	⚠
IC1002	TA76431AS	IC, LINEAR	
IC1002	TA76431ASTP6	IC, LINEAR	
IC2601	AN3808K	IC, LINEAR	
IC3001	NN13400A	IC, LINEAR	
IC3101	MN3885S	IC, CMOS STANDARD LOGIC	E.S.D.
IC3201	TA8898AN	IC, LINEAR (C)	
IC3801	AN3275SB-E1	IC, LINEAR	
IC4201	AN3663FBP-V	IC, LINEAR	
IC6001	MN101D02HPJ	IC, 8BIT MICROCONTROLLER / *See PV-V4621 Replacement Note	E.S.D.
IC6001	MN101D02HPJ1	IC, 8BIT MICROCONTROLLER / *See PV-V4621 Replacement Note	E.S.D.
IC6002	RPI-303	PHOTO INTERRUPTER	
IC6003	RPI-303	PHOTO INTERRUPTER	
IC6004	PST3147NR	IC, CMOS STANDARD LOGIC	E.S.D.
IC6004	XC61CC4702MR	IC, CMOS STANDARD LOGIC	E.S.D.
IC6005	LSUQ0030	IC, 1K EEP ROM / *See PV-V4621 Replacement Note	E.S.D.
IC6005	KS24C011CS	IC, 1K EEP ROM / *See PV-V4621 Replacement Note	E.S.D.
IC6005	AT24C01A10SI	IC, 1K EEP ROM / *See PV-V4621 Replacement Note	E.S.D.
IC6005	BR24C01AF-E2	IC, 1K EEP ROM / *See PV-V4621 Replacement Note	E.S.D.
IC6005	BR24C01AFWE2	IC, 1K EEP ROM / *See PV-V4621 Replacement Note	E.S.D.
IC6005	KS24C011IS	IC, 1K EEP ROM / *See PV-V4621 Replacement Note	E.S.D.
IC6005	M24C01-MN6	IC, 1K EEP ROM / *See PV-V4621 Replacement Note	E.S.D.
IC6301	PT6957E	IC, LOGIC	E.S.D.

TRANSISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
Q1001	2SC4559LP.KT	TRANSISTOR SI NPN	⚠
Q1001	2SC4130LF608	TRANSISTOR SI NPN	⚠
Q1002	2SD1458	TRANSISTOR SI NPN	
Q1002	2SD2259	TRANSISTOR SI NPN	
Q1051	2SD2159(T)	TRANSISTOR SI NPN	
Q1051	2SD1581(T)	TRANSISTOR SI NPN	
Q1052	2SD601A(RS)	TRANSISTOR SI NPN CHIP	
Q1052	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q1053	2SD235800A	TRANSISTOR SI NPN CHIP	
Q1053	2SD2097TV2R	TRANSISTOR SI NPN CHIP	
Q1080	2SB1398(Q)	TRANSISTOR SI NPN CHIP	
Q1081	2SD601A(RS)	TRANSISTOR SI NPN CHIP	
Q1081	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q1082	2SB1398(Q)	TRANSISTOR SI NPN CHIP	
Q1083	2SD601A(RS)	TRANSISTOR SI NPN CHIP	
Q1083	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q3001	2SB709A	TRANSISTOR SI PNP CHIP	
Q3001	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q3002	2SB709A(RS)	TRANSISTOR SI PNP CHIP	
Q3002	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q3003	2SD601A(RS)	TRANSISTOR SI NPN CHIP	
Q3003	2SC2412K146R	TRANSISTOR SI NPN CHIP	

Ref. No.	Part No.	Part Name & Description	Remarks
Q3203	2SD1819ARS	TRANSISTOR SI NPN CHIP (C)	
Q3203	2SC4081T106R	TRANSISTOR SI NPN CHIP (C)	
Q3875	2SB709A	TRANSISTOR SI PNP CHIP	
Q3875	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q4001	2SB1218ARS	TRANSISTOR SI PNP CHIP	
Q4001	2SA1576A106R	TRANSISTOR SI PNP CHIP	
Q4002	2SD1819ARS	TRANSISTOR SI NPN CHIP	
Q4003	2SD1819ARS	TRANSISTOR SI NPN CHIP	
Q4101	2SD601A(RS)	TRANSISTOR SI NPN CHIP	
Q4101	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q6001	2SD1819ARS	TRANSISTOR SI NPN CHIP	
Q6001	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q6002	2SB709A(RS)	TRANSISTOR SI PNP CHIP	
Q6002	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q6003	2SD1819ARS	TRANSISTOR SI NPN CHIP	
Q6003	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q6005	2SB709A(RS)	TRANSISTOR SI PNP CHIP	
Q6005	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q6006	2SD1819ARS	TRANSISTOR SI NPN CHIP	
Q6006	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q6007	UN511L	TRANSISTOR SI PNP CHIP (A)	
Q6007	DTA143EUA106	TRANSISTOR SI PNP CHIP (A)	
Q6009	VEKS5707	PHOTO SENSOR UNIT	
Q6010	VEKS5707	PHOTO SENSOR UNIT	
Q6301	IMT17-T110	TRANSISTOR COMPLX CMP SI PNP CHIP	
Q6302	IMT17-T110	TRANSISTOR COMPLX CMP SI PNP CHIP	
Q6303	2SB709A	TRANSISTOR SI PNP CHIP	
Q6303	2SA1037K146R	TRANSISTOR SI PNP CHIP	

DIODES

Ref. No.	Part No.	Part Name & Description	Remarks
D1001	DB105G	DIODE SI	
D1001	S1NB60-4101	DIODE SI	
D1002	ERA18-04	DIODE SI	
D1002	EG01	DIODE SI	
D1003	ERA18-04	DIODE SI	
D1003	EG01	DIODE SI	
D1005	ERA18-04	DIODE SI	
D1005	EG01	DIODE SI	
D1006	ERB32-01L3	DIODE SI	
D1006	RGP15GL-5008	DIODE SI	
D1008	EC21QS03L-TE	DIODE SI	
D1008	D1FM3	DIODE SI	
D1008	SFPJ-63	DIODE SI	
D1008	U2FWJ44M	DIODE SI	
D1009	D1FS4	DIODE SI	
D1009	EC10QS03L	DIODE SI	
D1009	EP10QY03	DIODE SI	
D1009	SFPJ-53	DIODE SI	
D1009	U1FWJ44N	DIODE SI	
D1015	MA2180LA	DIODE ZENER 18V	
D1015	1N4746A-T	DIODE ZENER 18V	

Ref. No.	Part No.	Part Name & Description	Remarks
D1015	1N4746ARL	DIODE ZENER 18V	
D1016	MA165	DIODE SI	
D1016	1SS119	DIODE SI	
D1016	1SS133T	DIODE SI	
D1051	MA4110N-H	DIODE ZENER 11V	
D1080	EK19V1	DIODE SI	
D1081	MA2240LA	DIODE ZENER CHIP 24V	
D1083	ERA15-01V5	DIODE SI	
D1084	ERA15-01V5	DIODE SI	
D1085	ERA15-01V5	DIODE SI	
D1086	ERA15-01V5	DIODE SI	
D1087	ERA15-01V5	DIODE SI	
D1088	ERA15-01V5	DIODE SI	
D3006	MA4051-M	DIODE ZENER 5.1V	
D3006	04AZ5.1ZTPA7	DIODE ZENER 5.1V	
D3007	MA4051-M	DIODE ZENER 5.1V	
D3007	04AZ5.1ZTPA7	DIODE ZENER 5.1V	
D4209	MA165	DIODE SI	
D4209	1SS119	DIODE SI	
D4209	1SS133T	DIODE SI	
D6001	VEKS5708	SENSOR LED UNIT	
D6003	MA165	DIODE SI	
D6003	1SS119	DIODE SI	
D6003	1SS133T	DIODE SI	
D6325	MA165	DIODE SI	
D6325	1SS119	DIODE SI	
D6325	1SS133T	DIODE SI	
D6326	MA165	DIODE SI	
D6326	1SS119	DIODE SI	
D6326	1SS133T	DIODE SI	

RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R1001	VRESC2TK275	CARBON 1/2W 2.7M	
R1001	VRESC2TK275C	CARBON 1/2W 2.7M	
R1001	VRESC2TK275T	CARBON 1/2W 2.7M	
R1003	VRESE2TJ334	CARBON 1/2W 330K	
R1004	ERG2SJ333H	METAL OXIDE 2W 33K	
R1005	ERG1SJ560P	METAL OXIDE 1W 56	
R1006	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R1007	ERDS2TJ101	CARBON 1/4W 100	
R1008	ERDS2TJ392	CARBON 1/4W 3.9K	
R1010	ERD25FJ100P	CARBON 1/4W 10	
R1010	ERD25FPJ100P	CARBON 1/4W 10	
R1010	VRESF4FJ100P	CARBON 1/4W 10	
R1014	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R1015	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R1016	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R1017	VRJSD6D2431V	MGF CHIP 1/10W 2.43K	
R1018	VRJSD6D2201V	MGF CHIP 1/10W 2.2K	
R1019	ERDS2T0	CARBON 1/4W 0	
R1025	ERDS2TJ300	CARBON 1/2W 30	
R1026	ERDS2TJ300	CARBON 1/2W 30	
R1051	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R1052	ERDS2TJ153	CARBON 1/4W 15K	
R1053	ERDS2TJ153	CARBON 1/4W 15K	
R1057	ERDS2TJ331	CARBON 1/4W 330	
R1058	ERDS2TJ104	CARBON 1/4W 100K	
R1080	ERDS2TJ103	CARBON 1/4W 10K	
R1081	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R1082	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R1083	VRESE2TJ122T	CARBON 1/2W 1.2K	
R1084	VRESE2TJ122T	CARBON 1/2W 1.2K	
R1085	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R1086	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R2601	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2602	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2603	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2604	ERDS2TJ1R0	CARBON 1/4W 1	
R2605	ERDS2TJ1R2	CARBON 1/4W 1.2	
R2606	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R3001	ERJ6GEYJ750V	MGF CHIP 1/10W 75	
R3002	ERDS2TJ561	CARBON 1/4W 560	
R3003	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R3004	ERJ6GEYJ750V	MGF CHIP 1/10W 75	
R3006	ERDS2TJ152	CARBON 1/4W 1.5K	
R3007	ERDS2TJ152	CARBON 1/4W 1.5K	
R3008	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R3009	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R3022	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R3023	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R3027	ERJ6GEYJ681V	MGF CHIP 1/10W 680	
R3029	ERJ6GEYJ125V	MGF CHIP 1/10W 1.2M	
R3031	ERJ6GEYJ474V	MGF CHIP 1/10W 470K	
R3033	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R3034	ERJ6GEYJ121V	MGF CHIP 1/10W 120	

Ref. No.	Part No.	Part Name & Description	Remarks
R3035	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R3036	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R3041	ERJ6GEYJ750V	MGF CHIP 1/10W 75	
R3053	ERJ6GEYJ684V	MGF CHIP 1/10W 680K	
R3201	ERJ6GEYJ821V	MGF CHIP 1/10W 820 (C)	
R3202	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K (C)	
R3203	ERJ6GEYJ103V	MGF CHIP 1/10W 10K (C)	
R3206	ERJ6GEY0R00V	MGF CHIP 1/10W 0 (C)	
R3210	ERJ6GEY0R00V	MGF CHIP 1/10W 0 (C)	
R3211	ERJ6GEY0R00V	MGF CHIP 1/10W 0 (C)	
R3212	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K (C)	
R3213	ERJ6GEYJ102V	MGF CHIP 1/10W 1K (C)	
R3301	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R3302	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R3305	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R3803	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R3807	ERJ6GEYJ393V	MGF CHIP 1/10W 39K	
R3810	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R3811	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R3812	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R3813	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R3874	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R3875	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R4001	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4002	ERJ6GEYJ334V	MGF CHIP 1/10W 330K	
R4003	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R4004	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R4005	ERJ6GEYJ225V	MGF CHIP 1/10W 2.2M	
R4006	ERJ6GEYJ681V	MGF CHIP 1/10W 680	
R4007	ERJ6GEYJ821V	MGF CHIP 1/10W 820	
R4008	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R4010	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4011	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R4012	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R4014	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R4015	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R4017	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4028	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R4102	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R4103	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R4201	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4202	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4203	ERJ6GEYJ822V	MGF CHIP 1/10W 8.2K	
R4204	ERJ6GEYJ822V	MGF CHIP 1/10W 8.2K	
R4205	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4206	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4207	ERJ6GEYJ822V	MGF CHIP 1/10W 8.2K	
R4208	ERJ6GEYJ822V	MGF CHIP 1/10W 8.2K	
R4209	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4210	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4213	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4214	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4218	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4223	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	

Ref. No.	Part No.	Part Name & Description	Remarks
R4224	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R4225	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4226	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R4228	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4453	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R4455	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R6001	ERDS2TJ101	CARBON 1/4W 100	
R6003	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6006	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6007	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R6010	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6012	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6016	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6019	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6022	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R6024	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6025	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R6026	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6027	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6028	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6029	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R6030	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6033	ERDS2TJ681	CARBON 1/4W 680	
R6037	ERJ6GEYJ391V	MGF CHIP 1/10W 390	
R6038	ERDS2TJ560T	CARBON 1/4W 56 (A)	
R6049	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6051	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6052	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6057	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6059	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6060	ERJ6GEYJ475V	MGF CHIP 1/10W 4.7M (A)	
R6060	ERJ6GEYJ105V	MGF CHIP 1/10W 1M (C)	
R6062	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R6063	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R6064	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R6066	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6069	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6070	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6071	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6072	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6073	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6074	ERDS2TJ272	CARBON 1/4W 2.7K	
R6078	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6079	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6080	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6081	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6082	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6085	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6086	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6087	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6088	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6089	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6109	ERJ6GEYJ183V	MGF CHIP 1/10W 18K	
R6110	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	

Ref. No.	Part No.	Part Name & Description	Remarks
R6115	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6116	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6202	ERJ6GEYJ274V	MGF CHIP 1/10W 270K	
R6203	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6204	ERJ6GEYJ184V	MGF CHIP 1/10W 180K	
R6205	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6224	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6228	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R6231	ERJ6GEYJ225V	MGF CHIP 1/10W 2.2M	
R6346	ERDS2TJ470	CARBON 1/4W 47	
R6364	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6365	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6366	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6367	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6368	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6369	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6370	ERJ6GEYJ121V	MGF CHIP 1/10W 120	
R6371	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6373	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R6374	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R6375	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R6376	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R6377	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R6378	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6379	ERDS2TJ102	CARBON 1/4W 1K	
R6380	ERDS2TJ102	CARBON 1/4W 1K	
R6381	ERDS2TJ102	CARBON 1/4W 1K	
R6382	ERDS2TJ102	CARBON 1/4W 1K	
R6521	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	

CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C1001	ECKATS103MF	CERAMIC 250V 0.01UF	
C1001	ECKETS103MF	CERAMIC 250V 0.01UF	
C1001	VCKST3G103MY	CERAMIC 250V 0.01UF	
C1001	VCKSU3D103MY	CERAMIC 125V 0.01UF	
C1002	ECKATS332ME8	CERAMIC 250V 3300PF	
C1002	ECKDNB332ME8	CERAMIC 125V 3300PF	
C1002	ECKETS332ME8	CERAMIC 250V 3300PF	
C1002	VCKST3G332MX	CERAMIC 250V 3300PF	
C1002	VCKSU3D332MX	CERAMIC 125V 3300PF	
C1003	ECKATS332ME8	CERAMIC 250V 3300PF	
C1003	ECKDNB332ME8	CERAMIC 125V 3300PF	
C1003	ECKETS332ME8	CERAMIC 250V 3300PF	
C1003	VCKST3G332MX	CERAMIC 250V 3300PF	
C1003	VCKSU3D332MX	CERAMIC 125V 3300PF	
C1004	ECEA2DU820YE	ELECTROLYTIC 200V 82UF	
C1004	VCESAN2D820E	ELECTROLYTIC 200V 82UF	
C1004	VCESR2D820XE	ELECTROLYTIC 200V 82UF	
C1005	ECA2DHG4R7B	ELECTROLYTIC 200V 4.7UF	

Ref. No.	Part No.	Part Name & Description	Remarks
C1006	ECKR2H221KB5	CERAMIC 500V 220PF	
C1007	ECUV1C224KBN	C CHIP 16V 0.22UF	
C1009	VCYSBRE183KX	CERAMIC 25V 0.018UF	
C1010	ECUV1H101JCN	C CHIP 50V 100PF	
C1011	ECA1HHG4R7I	ELECTROLYTIC 50V 4.7UF	
C1012	ECEA1PEE331	ELECTROLYTIC 18V 330UF	
C1013	ECA1EM331B	ELECTROLYTIC 25V 330UF	
C1016	ECEA1PEE331	ELECTROLYTIC 18V 330UF	
C1017	ECA0JM102B	ELECTROLYTIC 6.3V 1000UF	
C1018	ECUV1E104KBN	C CHIP 25V 0.1UF	
C1019	ECEA0JEE101	ELECTROLYTIC 6.3V 100UF	
C1027	ECKATS103MF	CERAMIC 250V 0.01UF	⚠
C1027	VCKST3G103MY	CERAMIC 250V 0.01UF	⚠
C1027	VCKSU3D103MY	CERAMIC 125V 0.01UF	⚠
C1029	ECUV1H101JCN	C CHIP 50V 100PF	
C1030	VCYSBRE183KX	CERAMIC 25V 0.018UF	
C1032	ECEA0JKA221	ELECTROLYTIC 6.3V 220UF	
C1051	ECEA1HKAR47	ELECTROLYTIC 50V 0.47UF	
C1052	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C1058	ECEA0JEE101	ELECTROLYTIC 6.3V 100UF	
C1059	ECEA1CKA470	ELECTROLYTIC 16V 47UF	
C1080	EEUFD1V331LB	ELECTROLYTIC 35V 330UF	
C2601	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C2602	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C2603	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C2604	ECUV1C104KBN	C CHIP 16V 0.1UF	
C2605	ECUV1C104KBN	C CHIP 16V 0.1UF	
C2606	ECUV1C104KBN	C CHIP 16V 0.1UF	
C2607	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C2608	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C2609	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C2610	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C2611	ECUV1H103KBN	C CHIP 50V 0.01UF	
C2612	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3001	ECA0JM471	ELECTROLYTIC 6.3V 470UF	
C3003	ECEA1CKA470	ELECTROLYTIC 16V 47UF	
C3004	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3014	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3015	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3017	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C3018	ECUV1H181JCN	C CHIP 50V 180PF	
C3019	ECUV1H560JCN	C CHIP 50V 56PF	
C3021	ECUV1C224ZFN	C CHIP 16V 0.22UF	
C3022	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3023	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C3024	ECEA0JKA470	ELECTROLYTIC 6.3V 47UF	
C3025	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3026	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3027	ECUV1C224ZFN	C CHIP 16V 0.22UF	
C3028	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C3029	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3030	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C3031	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	

Ref. No.	Part No.	Part Name & Description	Remarks
C3032	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C3033	ECEA0JKA470	ELECTROLYTIC 6.3V 47UF	
C3034	ECUV1C224ZFN	C CHIP 16V 0.22UF	
C3035	ECUV1H560JCN	C CHIP 50V 56PF	
C3036	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3037	ECEA0JKA220	ELECTROLYTIC 6.3V 22UF	
C3038	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C3039	ECUV1H822KBN	C CHIP 50V 8200PF	
C3043	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3044	ECEA1HKAR47	ELECTROLYTIC 50V 0.47UF	
C3045	ECUV1C474ZFN	C CHIP 16V 0.47UF	
C3047	ECUV1H181JCN	C CHIP 50V 180PF	
C3048	ECUV1H560JCN	C CHIP 50V 56PF	
C3049	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3050	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3051	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C3052	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3053	ECEA1HKAR47	ELECTROLYTIC 50V 0.47UF	
C3054	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C3055	ECUV1H392KBN	C CHIP 50V 3900PF	
C3056	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C3062	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3101	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C3102	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3104	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3105	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3106	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3108	ECUV1H102KBN	C CHIP 50V 1000PF	
C3109	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C3201	ECEA1HKA4R7	ELECTROLYTIC 50V 4.7UF (C)	
C3202	ECEA1HKA010	ELECTROLYTIC 50V 1UF (C)	
C3203	ECUV1H103ZFN	C CHIP 50V 0.01UF (C)	
C3204	ECUV1H103ZFN	C CHIP 50V 0.01UF (C)	
C3205	ECUV1H103ZFN	C CHIP 50V 0.01UF (C)	
C3206	ECEA1CKA100	ELECTROLYTIC 16V 10UF (C)	
C3207	ECUV1H103ZFN	C CHIP 50V 0.01UF (C)	
C3208	ECUV1H103ZFN	C CHIP 50V 0.01UF (C)	
C3209	ECUV1H103ZFN	C CHIP 50V 0.01UF (C)	
C3210	ECUV1H472KBN	C CHIP 50V 4700PF (C)	
C3211	ECUV1E104ZFN	C CHIP 25V 0.1UF (C)	
C3212	ECUV1H103ZFN	C CHIP 50V 0.01UF (C)	
C3213	ECUV1H103ZFN	C CHIP 50V 0.01UF (C)	
C3214	ECUV1E104ZFN	C CHIP 25V 0.1UF (C)	
C3215	ECUV1H103ZFN	C CHIP 50V 0.01UF (C)	
C3216	ECEA1CKA100	ELECTROLYTIC 16V 10UF (C)	
C3217	ECUV1H103ZFN	C CHIP 50V 0.01UF (C)	
C3220	ERJ6GEY0R00V	MGF CHIP 1/10W 0 (C)	
C3302	ECEA1HKAR47	ELECTROLYTIC 50V 0.47UF	
C3303	ECUV1H121JCN	C CHIP 50V 120PF	
C3306	ECEA1HKAR47	ELECTROLYTIC 50V 0.47UF	
C3308	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3501	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3502	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3503	ECUV1E104ZFN	C CHIP 25V 0.1UF	

Ref. No.	Part No.	Part Name & Description	Remarks
C3504	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3505	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3506	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3507	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3508	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3513	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C3514	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C3515	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C3516	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3517	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3518	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3519	ECUV1H102KBN	C CHIP 50V 1000PF	
C3801	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C3802	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3803	ECUV1H332KBN	C CHIP 50V 3300PF	
C3804	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3805	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3806	ECUV1H392KBN	C CHIP 50V 3900PF	
C3807	ECUV1H103KBN	C CHIP 50V 0.01UF	
C3808	ECUV1E104KBN	C CHIP 25V 0.1UF	
C3811	ECUV1H103KBN	C CHIP 50V 0.01UF	
C3812	ECUV1H102KBN	C CHIP 50V 1000PF	
C3815	ECUV1E104KBN	C CHIP 25V 0.1UF	
C3816	ECUV1E154KBN	C CHIP 25V 0.15UF	
C3817	ECUV1H103KBN	C CHIP 50V 0.01UF	
C3818	ECUV1H103KBN	C CHIP 50V 0.01UF	
C3819	ECUV1H103KBN	C CHIP 50V 0.01UF	
C3820	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3821	ECUV1H390JCN	C CHIP 50V 39PF	
C3822	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C3825	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C3826	ECEA1HKAR47	ELECTROLYTIC 50V 0.47UF	
C3828	ECUV1H101JCN	C CHIP 50V 100PF	
C3830	ECUV1E563KBN	C CHIP 25V 0.056UF	
C4001	ECUV1C224ZFN	C CHIP 16V 0.22UF	
C4002	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4003	ECUV1H272KBN	C CHIP 50V 2700PF	
C4004	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4005	ECEA0JKA220	ELECTROLYTIC 6.3V 22UF	
C4006	ECUV1H102KBN	C CHIP 50V 1000PF	
C4007	ECEA0JKA220	ELECTROLYTIC 6.3V 22UF	
C4008	ECEA0JKA470	ELECTROLYTIC 6.3V 47UF	
C4009	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4010	ECUV1E273KBN	C CHIP 25V 0.027UF	
C4011	ECUV1H822KBN	C CHIP 50V 8200PF	
C4012	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4013	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4014	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4017	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4102	ECQB1562JF	POLYESTER 100V 5600PF	
C4103	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4104	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4106	ECEA1CKA220	ELECTROLYTIC 16V 22UF	
C4201	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	

Ref. No.	Part No.	Part Name & Description	Remarks
C4202	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C4203	ECEA0JKA330	ELECTROLYTIC 6.3V 33UF	
C4204	ECEA0JKA330	ELECTROLYTIC 6.3V 33UF	
C4205	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4206	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4207	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4208	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4209	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4210	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4211	ECUV1H153KBN	C CHIP 50V 0.015UF	
C4212	ECUV1H153KBN	C CHIP 50V 0.015UF	
C4213	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4214	ECEA1CKA101	ELECTROLYTIC 16V 100UF	
C4216	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4217	ECEA0JKA220	ELECTROLYTIC 6.3V 22UF	
C4218	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4219	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4227	ECUV1C224ZFN	C CHIP 16V 0.22UF	
C4229	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C4230	ECEA0JKA470	ELECTROLYTIC 6.3V 47UF	
C4451	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4452	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4455	ECUV1E104KBN	C CHIP 25V 0.1UF	
C4456	ECUV1E104KBN	C CHIP 25V 0.1UF	
C4459	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C4901	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4902	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C4903	ECEA1HKA3R3	ELECTROLYTIC 50V 3.3UF	
C4904	ECEA1HKA3R3	ELECTROLYTIC 50V 3.3UF	
C4905	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4906	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4911	ECUV1E223KBN	C CHIP 25V 0.022UF	
C4912	ECUV1E104KBN	C CHIP 25V 0.1UF	
C4913	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4917	ECUV1E104KBN	C CHIP 25V 0.1UF	
C4918	ECUV1E104KBN	C CHIP 25V 0.1UF	
C4919	ECUV1E104KBN	C CHIP 25V 0.1UF	
C4920	ECUV1E223KBN	C CHIP 25V 0.022UF	
C6001	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C6003	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C6005	ECUV1H150JCN	C CHIP 50V 15PF	
C6006	ECUV1H100CCN	C CHIP 50V 10PF	
C6011	ECUV1H101JCN	C CHIP 50V 100PF	
C6016	VCESAM0J331I	ELECTROLYTIC 6.3V 330UF (A)	
C6019	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF (A)	
C6019	ECEA1CKA100	ELECTROLYTIC 16V 10UF (C)	
C6021	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C6024	ECUV1H101JCN	C CHIP 50V 100PF	
C6026	ECUV1H102KBN	C CHIP 50V 1000PF	
C6027	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C6033	ECUV1H104ZFN	C CHIP 50V 0.1UF	
C6201	ECUV1H332KBN	C CHIP 50V 3300PF	
C6203	ECUV1H103KBN	C CHIP 50V 0.01UF	
C6208	ECUV1C104KBN	C CHIP 16V 0.1UF	

Ref. No.	Part No.	Part Name & Description	Remarks
C6214	ECUV1H102KBN	C CHIP 50V 1000PF	
C6216	ECUV1H103KBN	C CHIP 50V 0.01UF	
C6217	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C6218	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C6221	ECEA0JKA220	ELECTROLYTIC 6.3V 22UF	
C6223	ECUV1H103KBN	C CHIP 50V 0.01UF	
C6224	VCESAM0J331I	ELECTROLYTIC 6.3V 330UF	
C6228	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C6231	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C6305	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C6306	ECEA0JKA331	ELECTROLYTIC 6.3V 330UF	
C6307	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C6320	VCESAM0J331I	ELECTROLYTIC 6.3V 330UF	
C6321	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C7001	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C7010	ECUV1H102KBN	C CHIP 50V 1000PF	

COILS

Ref. No.	Part No.	Part Name & Description	Remarks
L1001	ELF15N005A	LINE FILTER 0.5A 18MH	
L1002	VLQSAB7D220K	COIL 22UH	
L1003	VLQSAB7D100K	COIL 10UH	
L1006	VLPS0083	FILTER	
L3001	ELESN470KA	COIL 47UH	
L3014	VLQSH02R390K	COIL 39UH	
L3016	ELESN330KA	COIL 33UH	
L3018	ELESN470KA	COIL 47UH	
L3101	ELESN101KA	COIL 100UH	
L3201	ELESN101KA	COIL 100UH (C)	
L3202	ELESN680KA	COIL 68UH (C)	
L3505	ELESN101KA	COIL 100UH	
L3506	ELESN101KA	COIL 100UH	
L3507	ELESN101KA	COIL 100UH	
L3801	ELESN101KA	COIL 100UH	
L3802	ELESN470KA	COIL 47UH	
L4001	ELELN153KA	COIL 15MH	
L4002	ELESN101KA	COIL 100UH	
L4101	ELESN471KA	COIL 470UH	
L4201	ELESN101KA	COIL 100UH	
L4451	ELESN101KA	COIL 100UH	
L6002	ELEXT101KE04	COIL 100UH	
L6301	ELESN101KA	COIL 100UH	
L6302	ELESN470KA	COIL 47UH	
L6303	ERDS2TJ3R3	CARBON 1/4W 3.3	
L7003	VLQSH02R101K	COIL 100UH	

CRYSTAL OSCILLATOR

Ref. No.	Part No.	Part Name & Description	Remarks
X3010	VSXS0195	CRYSTAL OSCILLATOR	
X6001	VSXS0232-TB	CRYSTAL OSCILLATOR	

PIN HEADERS

Ref. No.	Part No.	Part Name & Description	Remarks
P3501	LSJWM9N050LL	CONNECTOR CABLE W/PLUG,DC 9V	
P3502	LSEK0407	SHIELD PLATE UNIT	
P4001	VJSS0888	FE CONNECTOR 2P	
P4002	LSJWM6N130LL	CONNECTOR CABLE W/PLUG,DC 9V	
P6201	LSJP0089	CONNECTOR 12P	
P6202	LSJWM8N045LL	CONNECTOR CABLE W/PLUG,DC 9V	

SWITCHES

Ref. No.	Part No.	Part Name & Description	Remarks
SW6001	LSSH0002	LEAF SWITCH-SAFETY TAB	
SW6002	LSSS0012	MODE SELECT SWITCH	
SW6306	EVQ11A09K	PUSH SWITCH	
SW6313	EVQ11A09K	PUSH SWITCH	
SW6314	EVQ11A09K	PUSH SWITCH	
SW6315	EVQ11A09K	PUSH SWITCH	
SW6316	EVQ11A09K	PUSH SWITCH	

FUSE & PROTECTOR

Ref. No.	Part No.	Part Name & Description	Remarks
F1001	VSFS0003A16	FUSE 125V 1.6A	⚠
F1001	VSFS0032B16	FUSE 125V 1.6A	⚠
F1001	XBA1C16NU100	FUSE 125V 1.6A	⚠
PR1001	UNH000600A	IC PROTECTOR 1.5A	⚠
PR1001	ICP-N38-TP1	IC PROTECTOR 1.5A	⚠
PR1001	LSSF009A25E	IC PROTECTOR 1.5A	⚠
PR1002	UNH000600A	IC PROTECTOR 1.5A	⚠
PR1002	ICP-N38-TP1	IC PROTECTOR 1.5A	⚠
PR1002	LSSF009A25E	IC PROTECTOR 1.5A	⚠
PR1080	UNH000600A	IC PROTECTOR 1.5A	⚠
PR1080	ICP-N38-TP1	IC PROTECTOR 1.5A	⚠
PR1080	LSSF009A25E	IC PROTECTOR 1.5A	⚠

TRANSFORMER

Ref. No.	Part No.	Part Name & Description	Remarks
T1001	LSTP0098	TRANSFORMER	⚠
T1001	ETS28AD2X5NC	TRANSFORMER	⚠
T4101	EIQ7QF018Q	OSC TRANSFORMER	

JACKS

Ref. No.	Part No.	Part Name & Description	Remarks
JK3001	LSJH0055	Hi-Fi AUDIO/VIDEO JACK SOCKET	*

MISCELLANEOUS

Ref. No.	Part No.	Part Name & Description	Remarks
711	LSSZ0004	INFRARED RECEIVER UNIT	
716	LSSZ0001	LED DISPLAY PANEL	
741	LSJA0360	AC CORD W/PLUG,AC 125V	
741	LSJA0358	AC CORD W/PLUG,AC 125V	
741	LSJA0359	AC CORD W/PLUG,AC 125V	
741	LSJA0361	AC CORD W/PLUG,AC 125V	
743	ENG56717G1	TUNER,UHF/VHF NR	E.S.D.
771	EYF52BC	FUSE HOLDER	

12.3.2. MAIN C.B.A.

(Model: B)

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name & Description	Remarks
IC1001	0N3131-R.KT	IC, LINEAR	
IC1001	PS2501-1-X	IC, LINEAR	
IC1001	0N3131-S.KT	IC, LINEAR	
IC1002	TA76431AS	IC, LINEAR	
IC1002	TA76431ASTP6	IC, LINEAR	
IC2601	AN3808K	IC, LINEAR	
IC3001	NN13400A	IC, LINEAR	
IC3101	MN3885S	IC, CCD	E.S.D.
IC3801	AN3275SB-E1	IC, LINEAR	
IC4201	AN3663FBP-V	IC, LINEAR	
IC6001	MN101D02HPJ	IC, 8BIT MICROCONTROLLER	E.S.D.
IC6002	RPI-303	PHOTO INTERRUPTER	
IC6003	RPI-303	PHOTO INTERRUPTER	
IC6004	PST3147NR	IC, CMOS STADNARD LOGIC	E.S.D.
IC6004	XC61CC4702MR	IC, CMOS STADNARD LOGIC	E.S.D.
IC6005	KS24C011CS	IC, 1K EEP ROM	E.S.D.
IC6005	AT24C01A10SI	IC, 1K EEP ROM	E.S.D.
IC6005	BR24C01AF-E2	IC, 1K EEP ROM	E.S.D.
IC6005	BR24C01AFWE2	IC, 1K EEP ROM	E.S.D.
IC6005	KS24C011IS	IC, 1K EEP ROM	E.S.D.
IC6005	M24C01-MN6	IC, 1K EEP ROM	E.S.D.
IC6301	PT6957E	IC, LOGIC	E.S.D.

TRANSISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
Q1001	2SC4533LP.KT	TRANSISTOR SI NPN	
Q1001	2SC5130LF608	TRANSISTOR SI NPN	
Q1002	2SD1458	TRANSISTOR SI NPN	
Q1002	2SD2259	TRANSISTOR SI NPN	
Q1051	2SD2159(T)	TRANSISTOR SI NPN	
Q1051	2SD1581(T)	TRANSISTOR SI NPN	
Q1052	2SD601A(RS)	TRANSISTOR SI NPN CHIP	
Q1052	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q1053	2SD235800A	TRANSISTOR SI NPN CHIP	
Q1053	2SD2097TV2R	TRANSISTOR SI NPN CHIP	
Q1080	2SB1398(Q)	TRANSISTOR SI NPN CHIP	
Q1081	2SD601A(RS)	TRANSISTOR SI NPN CHIP	
Q1081	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q1082	2SB1398(Q)	TRANSISTOR SI NPN CHIP	
Q1083	2SD601A(RS)	TRANSISTOR SI NPN CHIP	
Q1083	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q3001	2SB709A	TRANSISTOR SI PNP CHIP	
Q3001	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q3002	2SB709A(RS)	TRANSISTOR SI PNP CHIP	
Q3002	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q3003	2SD601A(RS)	TRANSISTOR SI NPN CHIP	
Q3003	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q3875	2SB709A	TRANSISTOR SI PNP CHIP	
Q3875	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q4001	2SB1218ARS	TRANSISTOR SI PNP CHIP	
Q4001	2SA1576A106R	TRANSISTOR SI PNP CHIP	
Q4002	2SD1819ARS	TRANSISTOR SI NPN CHIP	
Q4003	2SD1819ARS	TRANSISTOR SI NPN CHIP	
Q4101	2SD601A(RS)	TRANSISTOR SI NPN CHIP	
Q4101	2SC2412K146R	TRANSISTOR SI NPN CHIP	
Q6001	2SD1819ARS	TRANSISTOR SI NPN CHIP	
Q6001	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q6002	2SB709A(RS)	TRANSISTOR SI PNP CHIP	
Q6002	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q6003	2SD1819ARS	TRANSISTOR SI NPN CHIP	
Q6003	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q6005	2SB709A(RS)	TRANSISTOR SI PNP CHIP	
Q6005	2SA1037K146R	TRANSISTOR SI PNP CHIP	
Q6006	2SD1819ARS	TRANSISTOR SI NPN CHIP	
Q6006	2SC4081T106R	TRANSISTOR SI NPN CHIP	
Q6009	VEKS5707	PHOTO SENSOR UNIT	
Q6010	VEKS5707	PHOTO SENSOR UNIT	
Q6301	IMT17-T110	TRANSISTOR COMPLX CMP SI PNP CHIP	
Q6302	IMT17-T110	TRANSISTOR COMPLX CMP SI PNP CHIP	
Q6303	2SB709A	TRANSISTOR SI PNP CHIP	
Q6303	2SA1037K146R	TRANSISTOR SI PNP CHIP	

DIODES

Ref. No.	Part No.	Part Name & Description	Remarks
D1001	DB105G	DIODE SI	
D1001	S1NB60-4101	DIODE SI	
D1002	ERA18-04	DIODE SI	
D1002	EG01	DIODE SI	
D1003	ERA18-04	DIODE SI	
D1003	EG01	DIODE SI	
D1005	ERA18-04	DIODE SI	
D1005	EG01	DIODE SI	
D1006	ERB32-01L3	DIODE SI	
D1006	RGP15GL-5008	DIODE SI	
D1008	EC21QS03L-TE	DIODE SI	
D1008	D1FM3	DIODE SI	
D1008	SFPJ-63	DIODE SI	
D1008	U2FWJ44M	DIODE SI	
D1009	D1FS4	DIODE SI	
D1009	EC10QS03L	DIODE SI	
D1009	EP10QY03	DIODE SI	
D1009	SFPJ-53	DIODE SI	
D1009	U1FWJ44N	DIODE SI	
D1015	MA2180LA	DIODE ZENER 18V	
D1015	1N4746A-T	DIODE ZENER 18V	
D1015	1N4746ARL	DIODE ZENER 18V	
D1016	MA165	DIODE SI	
D1016	1SS119	DIODE SI	
D1016	1SS133T	DIODE SI	
D1051	MA4110N-H	DIODE ZENER 11V	
D1080	EK19V1	DIODE SI	
D1081	MA2240LA	DIODE ZENER CHIP 24V	
D1083	ERA15-01V5	DIODE SI	
D1084	ERA15-01V5	DIODE SI	
D1085	ERA15-01V5	DIODE SI	
D1086	ERA15-01V5	DIODE SI	
D1087	ERA15-01V5	DIODE SI	
D1088	ERA15-01V5	DIODE SI	
D3006	MA4051-M	DIODE ZENER 5.1V	
D3006	04AZ5.1ZTPA7	DIODE ZENER 5.1V	
D3007	MA4051-M	DIODE ZENER 5.1V	
D3007	04AZ5.1ZTPA7	DIODE ZENER 5.1V	
D4209	MA165	DIODE SI	
D4209	1SS119	DIODE SI	
D4209	1SS133T	DIODE SI	
D6001	VEKS5708	SENSOR LED UNIT	
D6003	MA165	DIODE SI	
D6003	1SS119	DIODE SI	
D6003	1SS133T	DIODE SI	
D6325	MA165	DIODE SI	
D6325	1SS119	DIODE SI	
D6325	1SS133T	DIODE SI	
D6326	MA165	DIODE SI	
D6326	1SS119	DIODE SI	
D6326	1SS133T	DIODE SI	

RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R1001	VRESC2TK275	CARBON 1/2W 2.7M	
R1001	VRESC2TK275C	CARBON 1/2W 2.7M	
R1001	VRESC2TK275T	CARBON 1/2W 2.7M	
R1003	VRESE2TJ334	CARBON 1/2W 330K	
R1004	ERG2SJ333H	METAL OXIDE 2W 33K	
R1005	ERG1SJ560P	METAL OXIDE 1W 56	
R1006	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R1007	ERDS2TJ101	CARBON 1/4W 100	
R1008	ERDS2TJ392	CARBON 1/4W 3.9K	
R1010	ERD25FJ100P	CARBON 1/4W 10	
R1010	ERD25FPJ100P	CARBON 1/4W 10	
R1010	VRESF4FJ100P	CARBON 1/4W 10	
R1014	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R1015	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R1016	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R1017	VRJSD6D2431V	MGF CHIP 1/10W 2.43K	
R1018	VRJSD6D2201V	MGF CHIP 1/10W 2.2K	
R1019	ERDS2T0	CARBON 1/4W 0	
R1025	ERDS2TJ300	CARBON 1/2W 30	
R1026	ERDS2TJ300	CARBON 1/2W 30	
R1051	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R1052	ERDS2TJ153	CARBON 1/4W 15K	
R1053	ERDS2TJ153	CARBON 1/4W 15K	
R1057	ERDS2TJ331	CARBON 1/4W 330	
R1058	ERDS2TJ104	CARBON 1/4W 100K	
R1080	ERDS2TJ103	CARBON 1/4W 10K	
R1081	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R1082	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R1083	VRESE2TJ122T	CARBON 1/2W 1.2K	
R1084	VRESE2TJ122T	CARBON 1/2W 1.2K	
R1085	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R1086	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R2601	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2602	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2603	ERJ6GEYJ330V	MGF CHIP 1/10W 33	
R2604	ERDS2TJ1R0	CARBON 1/4W 1	
R2605	ERDS2TJ1R2	CARBON 1/4W 1.2	
R2606	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R3001	ERJ6GEYJ750V	MGF CHIP 1/10W 75	
R3002	ERDS2TJ561	CARBON 1/4W 560	
R3003	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R3004	ERJ6GEYJ750V	MGF CHIP 1/10W 75	
R3006	ERDS2TJ152	CARBON 1/4W 1.5K	
R3007	ERDS2TJ152	CARBON 1/4W 1.5K	
R3008	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R3009	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R3022	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R3023	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R3027	ERJ6GEYJ681V	MGF CHIP 1/10W 680	
R3029	ERJ6GEYJ125V	MGF CHIP 1/10W 1.2M	

Ref. No.	Part No.	Part Name & Description	Remarks
R3031	ERJ6GEYJ474V	MGF CHIP 1/10W 470K	
R3033	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R3034	ERJ6GEYJ121V	MGF CHIP 1/10W 120	
R3035	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R3036	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R3041	ERJ6GEYJ750V	MGF CHIP 1/10W 75	
R3053	ERJ6GEYJ684V	MGF CHIP 1/10W 680K	
R3301	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R3302	ERJ6GEYJ392V	MGF CHIP 1/10W 3.9K	
R3305	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R3803	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R3807	ERJ6GEYJ393V	MGF CHIP 1/10W 39K	
R3810	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R3811	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R3812	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R3813	ERJ6GEYJ563V	MGF CHIP 1/10W 56K	
R3874	ERJ6GEYJ471V	MGF CHIP 1/10W 470	
R3875	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R4001	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4002	ERJ6GEYJ334V	MGF CHIP 1/10W 330K	
R4003	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R4004	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R4005	ERJ6GEYJ225V	MGF CHIP 1/10W 2.2M	
R4006	ERJ6GEYJ681V	MGF CHIP 1/10W 680	
R4007	ERJ6GEYJ821V	MGF CHIP 1/10W 820	
R4008	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R4010	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4011	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R4012	ERJ6GEYJ682V	MGF CHIP 1/10W 6.8K	
R4014	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R4015	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R4017	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4028	ERJ6GEY0R00V	MGF CHIP 1/10W 0	
R4102	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R4103	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R4201	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4202	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4203	ERJ6GEYJ822V	MGF CHIP 1/10W 8.2K	
R4204	ERJ6GEYJ822V	MGF CHIP 1/10W 8.2K	
R4205	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4206	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R4207	ERJ6GEYJ822V	MGF CHIP 1/10W 8.2K	
R4208	ERJ6GEYJ822V	MGF CHIP 1/10W 8.2K	
R4209	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4210	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4213	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4214	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4218	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R4223	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4224	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R4225	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4226	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R4228	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R4453	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	

Ref. No.	Part No.	Part Name & Description	Remarks
R4455	ERJ6GEYJ152V	MGF CHIP 1/10W 1.5K	
R6001	ERDS2TJ101	CARBON 1/4W 100	
R6003	ERJ6GEYJ222V	MGF CHIP 1/10W 2.2K	
R6006	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6007	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R6010	ERJ6GEYJ182V	MGF CHIP 1/10W 1.8K	
R6012	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6016	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6019	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6022	ERJ6GEYJ333V	MGF CHIP 1/10W 33K	
R6024	ERJ6GEYJ562V	MGF CHIP 1/10W 5.6K	
R6025	ERJ6GEYJ332V	MGF CHIP 1/10W 3.3K	
R6026	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6027	ERJ6GEYJ101V	MGF CHIP 1/10W 100	
R6028	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6029	ERJ6GEYJ561V	MGF CHIP 1/10W 560	
R6030	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6033	ERDS2TJ681	CARBON 1/4W 680	
R6037	ERJ6GEYJ391V	MGF CHIP 1/10W 390	
R6049	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6051	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6052	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	
R6057	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6059	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6060	ERJ6GEYJ105V	MGF CHIP 1/10W 1M	
R6062	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R6063	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R6064	ERJ6GEYJ153V	MGF CHIP 1/10W 15K	
R6066	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6069	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6070	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6071	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6072	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6073	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6074	ERDS2TJ272	CARBON 1/4W 2.7K	
R6078	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6079	ERJ6GEYJ221V	MGF CHIP 1/10W 220	
R6080	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6081	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6082	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6085	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6086	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6087	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6088	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6089	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6109	ERJ6GEYJ183V	MGF CHIP 1/10W 18K	
R6110	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6115	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6116	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6202	ERJ6GEYJ274V	MGF CHIP 1/10W 270K	
R6203	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	
R6204	ERJ6GEYJ184V	MGF CHIP 1/10W 180K	
R6205	ERJ6GEYJ473V	MGF CHIP 1/10W 47K	
R6224	ERJ6GEYJ472V	MGF CHIP 1/10W 4.7K	

Ref. No.	Part No.	Part Name & Description	Remarks
R6228	ERJ6GEYJ122V	MGF CHIP 1/10W 1.2K	
R6231	ERJ6GEYJ225V	MGF CHIP 1/10W 2.2M	
R6346	ERDS2TJ470	CARBON 1/4W 47	
R6364	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6365	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6366	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6367	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6368	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6369	ERJ6GEYJ104V	MGF CHIP 1/10W 100K	
R6370	ERJ6GEYJ121V	MGF CHIP 1/10W 120	
R6371	ERJ6GEYJ223V	MGF CHIP 1/10W 22K	
R6373	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R6374	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R6375	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R6376	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R6377	ERJ6GEYJ272V	MGF CHIP 1/10W 2.7K	
R6378	ERJ6GEYJ102V	MGF CHIP 1/10W 1K	
R6379	ERDS2TJ102	CARBON 1/4W 1K	
R6380	ERDS2TJ102	CARBON 1/4W 1K	
R6381	ERDS2TJ102	CARBON 1/4W 1K	
R6382	ERDS2TJ102	CARBON 1/4W 1K	
R6521	ERJ6GEYJ103V	MGF CHIP 1/10W 10K	

CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C1001	ECKATS103MF	CERAMIC 250V 0.01UF	
C1002	ECKATS332ME8	CERAMIC 250V 3300PF	
C1002	ECKDNB332ME8	CERAMIC 125V 3300PF	
C1002	ECKETS332ME8	CERAMIC 250V 3300PF	
C1002	VCKST3G332MX	CERAMIC 250V 3300PF	
C1002	VCKSU3D332MX	CERAMIC 125V 3300PF	
C1003	ECKATS332ME8	CERAMIC 250V 3300PF	
C1003	ECKDNB332ME8	CERAMIC 125V 3300PF	
C1003	ECKETS332ME8	CERAMIC 250V 3300PF	
C1003	VCKST3G332MX	CERAMIC 250V 3300PF	
C1003	VCKSU3D332MX	CERAMIC 125V 3300PF	
C1004	ECEA2DU820YE	ELECTROLYTIC 200V 82UF	
C1004	VCESAN2D820E	ELECTROLYTIC 200V 82UF	
C1004	VCESR2D820XE	ELECTROLYTIC 200V 82UF	
C1005	ECA2DHG4R7B	ELECTROLYTIC 200V 4.7UF	
C1006	ECKR2H221KB5	CERAMIC 500V 220PF	
C1007	ECUV1C224KBN	C CHIP 16V 0.22UF	
C1009	VCYSBRE183KX	CERAMIC 25V 0.018UF	
C1010	ECUV1H101JCN	C CHIP 50V 100PF	
C1011	ECA1HHG4R7I	ELECTROLYTIC 50V 4.7UF	
C1012	ECEA1PEE331	ELECTROLYTIC 18V 330UF	
C1013	ECA1EM331B	ELECTROLYTIC 25V 330UF	
C1016	ECEA1PEE331	ELECTROLYTIC 18V 330UF	
C1017	ECA0JM102B	ELECTROLYTIC 6.3V 1000UF	
C1018	ECUV1E104KBN	C CHIP 25V 0.1UF	
C1019	ECEA0JEE101	ELECTROLYTIC 6.3V 100UF	

Ref. No.	Part No.	Part Name & Description	Remarks
C1027	ECKATS103MF	CERAMIC 250V 0.01UF	
C1029	ECUV1H101JCN	C CHIP 50V 100PF	
C1030	VCYSBRE183KX	CERAMIC 25V 0.018UF	
C1032	ECEA0JKA221	ELECTROLYTIC 6.3V 220UF	
C1051	ECEA1HKAR47	ELECTROLYTIC 50V 0.47UF	
C1052	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C1058	ECEA0JEE101	ELECTROLYTIC 6.3V 100UF	
C1059	ECEA1CKA470	ELECTROLYTIC 16V 47UF	
C1080	EEUFD1V331LB	ELECTROLYTIC 35V 330UF	
C2601	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C2602	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C2603	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C2604	ECUV1C104KBN	C CHIP 16V 0.1UF	
C2605	ECUV1C104KBN	C CHIP 16V 0.1UF	
C2606	ECUV1C104KBN	C CHIP 16V 0.1UF	
C2607	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C2608	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C2609	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C2610	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C2611	ECUV1H103KBN	C CHIP 50V 0.01UF	
C2612	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3001	ECA0JM471	ELECTROLYTIC 6.3V 470UF	
C3003	ECEA1CKA470	ELECTROLYTIC 16V 47UF	
C3004	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3014	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3015	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3017	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C3018	ECUV1H181JCN	C CHIP 50V 180PF	
C3019	ECUV1H560JCN	C CHIP 50V 56PF	
C3021	ECUV1C224ZFN	C CHIP 16V 0.22UF	
C3022	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3023	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C3024	ECEA0JKA470	ELECTROLYTIC 6.3V 47UF	
C3025	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3026	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3027	ECUV1C224ZFN	C CHIP 16V 0.22UF	
C3028	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C3029	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3030	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C3031	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C3032	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C3033	ECEA0JKA470	ELECTROLYTIC 6.3V 47UF	
C3034	ECUV1C224ZFN	C CHIP 16V 0.22UF	
C3035	ECUV1H560JCN	C CHIP 50V 56PF	
C3036	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3037	ECEA0JKA220	ELECTROLYTIC 6.3V 22UF	
C3038	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C3039	ECUV1H822KBN	C CHIP 50V 8200PF	
C3043	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3044	ECEA1HKAR47	ELECTROLYTIC 50V 0.47UF	
C3045	ECUV1C474ZFN	C CHIP 16V 0.47UF	
C3047	ECUV1H181JCN	C CHIP 50V 180PF	
C3048	ECUV1H560JCN	C CHIP 50V 56PF	
C3049	ECUV1E104ZFN	C CHIP 25V 0.1UF	

Ref. No.	Part No.	Part Name & Description	Remarks
C3050	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3051	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C3052	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3053	ECEA1HKAR47	ELECTROLYTIC 50V 0.47UF	
C3054	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C3055	ECUV1H392KBN	C CHIP 50V 3900PF	
C3056	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C3062	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3101	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C3102	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3104	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3105	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3106	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3108	ECUV1H102KBN	C CHIP 50V 1000PF	
C3109	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C3302	ECEA1HKAR47	ELECTROLYTIC 50V 0.47UF	
C3303	ECUV1H121JCN	C CHIP 50V 120PF	
C3306	ECEA1HKAR47	ELECTROLYTIC 50V 0.47UF	
C3308	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3501	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3502	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3503	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3504	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3505	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3506	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3507	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3508	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3513	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C3514	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C3515	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C3516	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3517	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3518	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3519	ECUV1H102KBN	C CHIP 50V 1000PF	
C3801	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C3802	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3803	ECUV1H332KBN	C CHIP 50V 3300PF	
C3804	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3805	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C3806	ECUV1H392KBN	C CHIP 50V 3900PF	
C3807	ECUV1H103KBN	C CHIP 50V 0.01UF	
C3808	ECUV1E104KBN	C CHIP 25V 0.1UF	
C3811	ECUV1H103KBN	C CHIP 50V 0.01UF	
C3812	ECUV1H102KBN	C CHIP 50V 1000PF	
C3815	ECUV1E104KBN	C CHIP 25V 0.1UF	
C3816	ECUV1E154KBN	C CHIP 25V 0.15UF	
C3817	ECUV1H103KBN	C CHIP 50V 0.01UF	
C3818	ECUV1H103KBN	C CHIP 50V 0.01UF	
C3819	ECUV1H103KBN	C CHIP 50V 0.01UF	
C3820	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C3821	ECUV1H390JCN	C CHIP 50V 39PF	
C3822	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C3825	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C3826	ECEA1HKAR47	ELECTROLYTIC 50V 0.47UF	

Ref. No.	Part No.	Part Name & Description	Remarks
C3828	ECUV1H101JCN	C CHIP 50V 100PF	
C3830	ECUV1E563KBN	C CHIP 25V 0.056UF	
C4001	ECUV1C224ZFN	C CHIP 16V 0.22UF	
C4002	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4003	ECUV1H272KBN	C CHIP 50V 2700PF	
C4004	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4005	ECEA0JKA220	ELECTROLYTIC 6.3V 22UF	
C4006	ECUV1H102KBN	C CHIP 50V 1000PF	
C4007	ECEA0JKA220	ELECTROLYTIC 6.3V 22UF	
C4008	ECEA0JKA470	ELECTROLYTIC 6.3V 47UF	
C4009	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4010	ECUV1E273KBN	C CHIP 25V 0.027UF	
C4011	ECUV1H822KBN	C CHIP 50V 8200PF	
C4012	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4013	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4014	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4017	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4102	ECQB1562JF	POLYESTER 100V 5600PF	
C4103	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4104	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4106	ECEA1CKA220	ELECTROLYTIC 16V 22UF	
C4201	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C4202	ECEA1EKA4R7	ELECTROLYTIC 25V 4.7UF	
C4203	ECEA0JKA330	ELECTROLYTIC 6.3V 33UF	
C4204	ECEA0JKA330	ELECTROLYTIC 6.3V 33UF	
C4205	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4206	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4207	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4208	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4209	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4210	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4211	ECUV1H153KBN	C CHIP 50V 0.015UF	
C4212	ECUV1H153KBN	C CHIP 50V 0.015UF	
C4213	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4214	ECEA1CKA101	ELECTROLYTIC 16V 100UF	
C4216	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4217	ECEA0JKA220	ELECTROLYTIC 6.3V 22UF	
C4218	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4219	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4227	ECUV1C224ZFN	C CHIP 16V 0.22UF	
C4229	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C4230	ECEA0JKA470	ELECTROLYTIC 6.3V 47UF	
C4451	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4452	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4455	ECUV1E104KBN	C CHIP 25V 0.1UF	
C4456	ECUV1E104KBN	C CHIP 25V 0.1UF	
C4459	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C4901	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4902	ECEA1HKA2R2	ELECTROLYTIC 50V 2.2UF	
C4903	ECEA1HKA3R3	ELECTROLYTIC 50V 3.3UF	
C4904	ECEA1HKA3R3	ELECTROLYTIC 50V 3.3UF	
C4905	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C4906	ECEA1HKA010	ELECTROLYTIC 50V 1UF	
C4911	ECUV1E223KBN	C CHIP 25V 0.022UF	

Ref. No.	Part No.	Part Name & Description	Remarks
C4912	ECUV1E104KBN	C CHIP 25V 0.1UF	
C4913	ECUV1H103KBN	C CHIP 50V 0.01UF	
C4917	ECUV1E104KBN	C CHIP 25V 0.1UF	
C4918	ECUV1E104KBN	C CHIP 25V 0.1UF	
C4919	ECUV1E104KBN	C CHIP 25V 0.1UF	
C4920	ECUV1E223KBN	C CHIP 25V 0.022UF	
C6001	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C6003	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C6005	ECUV1H150JCN	C CHIP 50V 15PF	
C6006	ECUV1H100CCN	C CHIP 50V 10PF	
C6011	ECUV1H101JCN	C CHIP 50V 100PF	
C6019	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C6021	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C6024	ECUV1H101JCN	C CHIP 50V 100PF	
C6026	ECUV1H102KBN	C CHIP 50V 1000PF	
C6027	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C6033	ECUV1H104ZFN	C CHIP 50V 0.1UF	
C6201	ECUV1H332KBN	C CHIP 50V 3300PF	
C6203	ECUV1H103KBN	C CHIP 50V 0.01UF	
C6208	ECUV1C104KBN	C CHIP 16V 0.1UF	
C6214	ECUV1H102KBN	C CHIP 50V 1000PF	
C6216	ECUV1H103KBN	C CHIP 50V 0.01UF	
C6217	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C6218	ECEA1CKA100	ELECTROLYTIC 16V 10UF	
C6221	ECEA0JKA220	ELECTROLYTIC 6.3V 22UF	
C6223	ECUV1H103KBN	C CHIP 50V 0.01UF	
C6224	VCESAM0J331I	ELECTROLYTIC 6.3V 330UF	
C6228	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C6231	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C6305	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C6306	ECEA0JKA331	ELECTROLYTIC 6.3V 330UF	
C6307	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C6320	VCESAM0J331I	ELECTROLYTIC 6.3V 330UF	
C6321	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C7001	ECEA0JKA101	ELECTROLYTIC 6.3V 100UF	
C7010	ECUV1H102KBN	C CHIP 50V 1000PF	

COILS

Ref. No.	Part No.	Part Name & Description	Remarks
L1001	ELF15N005A	LINE FILTER 0.5A 18MH	
L1001	LSLQ0287	LINE FILTER 0.5A 18MH	
L1001	VLQS0166	LINE FILTER 0.5A 18MH	
L1001	VLQS0167	LINE FILTER 0.5A 18MH	
L1001	VLQS0170	LINE FILTER 0.6A 18MH	
L1002	VLQSAB7D220K	COIL 22UH	
L1003	VLQSAB7D100K	COIL 10UH	
L1006	VLPS0083	FILTER	
L3001	ELESN470KA	COIL 47UH	
L3014	VLQSH02R390K	COIL 39UH	
L3016	ELESN330KA	COIL 33UH	
L3018	ELESN470KA	COIL 47UH	
L3101	ELESN101KA	COIL 100UH	
L3505	ELESN101KA	COIL 100UH	
L3506	ELESN101KA	COIL 100UH	
L3507	ELESN101KA	COIL 100UH	
L3801	ELESN101KA	COIL 100UH	
L3802	ELESN470KA	COIL 47UH	
L4001	ELELN153KA	COIL 15MH	
L4002	ELESN101KA	COIL 100UH	
L4101	ELESN471KA	COIL 470UH	
L4201	ELESN101KA	COIL 100UH	
L4451	ELESN101KA	COIL 100UH	
L6002	ELEXT101KE04	COIL 100UH	
L6301	ELESN101KA	COIL 100UH	
L6302	ELESN470KA	COIL 47UH	
L6303	ERDS2TJ3R3	CARBON 1/4W 3.3	
L7003	VLQSH02R101K	COIL 100UH	

CRYSTAL OSCILLATOR

Ref. No.	Part No.	Part Name & Description	Remarks
X3010	VSXS0195	CRYSTAL OSCILLATOR	
X6001	VSXS0232-TB	CRYSTAL OSCILLATOR	

PIN HEADERS

Ref. No.	Part No.	Part Name & Description	Remarks
P3501	LSJWM9N050LL	CONNECTOR CABLE W/PLUG,DC 9V	
P3502	LSEK0407	SHIELD PLATE UNIT	
P4001	VJSS0888	FE CONNECTOR 2P	
P4002	LSJWM6N130LL	CONNECTOR CABLE W/PLUG,DC 9V	
P6201	LSJP0089	CONNECTOR 12P	
P6202	LSJWM8N045LL	CONNECTOR CABLE W/PLUG,DC 9V	

SWITCHES

Ref. No.	Part No.	Part Name & Description	Remarks
SW6001	LSSH0002	LEAF SWITCH-SAFETY TAB	
SW6002	LSSS0012	MODE SELECT SWITCH	
SW6301	EVQ11A09K	PUSH SWITCH	
SW6303	EVQ11A09K	PUSH SWITCH	
SW6306	EVQ11A09K	PUSH SWITCH	
SW6308	EVQ11A09K	PUSH SWITCH	
SW6309	EVQ11A09K	PUSH SWITCH	
SW6310	EVQ11A09K	PUSH SWITCH	
SW6314	EVQ11A09K	PUSH SWITCH	
SW6315	EVQ11A09K	PUSH SWITCH	
SW6316	EVQ11A09K	PUSH SWITCH	

FUSE & PROTECTOR

Ref. No.	Part No.	Part Name & Description	Remarks
F1001	VSFS0003A16	FUSE 125V 1.6A	⚠
F1001	VSFS0032B16	FUSE 125V 1.6A	⚠
F1001	XBA1C16NU100	FUSE 125V 1.6A	⚠
PR1001	UNH000600A	IC PROTECTOR 1.5A	⚠
PR1001	ICP-N38-TP1	IC PROTECTOR 1.5A	⚠
PR1001	LSSF009A25E	IC PROTECTOR 1.5A	⚠
PR1002	UNH000600A	IC PROTECTOR 1.5A	⚠
PR1002	ICP-N38-TP1	IC PROTECTOR 1.5A	⚠
PR1002	LSSF009A25E	IC PROTECTOR 1.5A	⚠
PR1080	UNH000600A	IC PROTECTOR 1.5A	⚠
PR1080	ICP-N38-TP1	IC PROTECTOR 1.5A	⚠
PR1080	LSSF009A25E	IC PROTECTOR 1.5A	⚠

TRANSFORMER

Ref. No.	Part No.	Part Name & Description	Remarks
T1001	LSTP0098	TRANSFORMER	⚠
T1001	ETS28AD2X5NC	TRANSFORMER	⚠
T4101	EIQ7QF018Q	OSC TRANSFORMER	

JACKS

Ref. No.	Part No.	Part Name & Description	Remarks
JK3001	LSJH0055	Hi-Fi AUDIO/VIDEO JACK SOCKET	
JK3002	LSJH0057	AUDIO/VIDEO JACK SOCKET	

MISCELLANEOUS

Ref. No.	Part No.	Part Name & Description	Remarks
711	LSSZ0004	INFRARED RECEIVER UNIT	
716	LSSZ0001	LED DISPLAY PANEL	
741	LSJA0360	AC CORD W/PLUG,AC 125V	
741	LSJA0358	AC CORD W/PLUG,AC 125V	
741	LSJA0359	AC CORD W/PLUG,AC 125V	
741	LSJA0361	AC CORD W/PLUG,AC 125V	
743	ENG56717G1	TUNER,UHF/VHF NR	E.S.D.
771	EYF52BC	FUSE HOLDER	

12.3.3. OPERATION C.B.A. (Model: A,C)

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C

PIN HEADERS

Ref. No.	Part No.	Part Name & Description	Remarks
P6302	LSJWMAN050AC	CONNECTOR CABLE W/OUT PLUG ,5V	
P6303	LSJWMAN050AC	CONNECTOR CABLE W/OUT PLUG ,5V	

SWITCHES

Ref. No.	Part No.	Part Name & Description	Remarks
SW6301	EVQ11G05R	PUSH SWITCH	
SW6302	EVQ11G05R	PUSH SWITCH	
SW6303	EVQ11G05R	PUSH SWITCH	
SW6304	EVQ11G05R	PUSH SWITCH	

JACKS

Ref. No.	Part No.	Part Name & Description	Remarks
JK7801	LSJH0059	FRONT AUDIO/VIDEO JACK SOCKET	

12.3.4. CAPSTAN STATOR C.B.A. NR

INTEGRATED CIRCUITS

Ref. No.	Part No.	Part Name & Description	Remarks
IC2501	AN3846SC	IC, LINEAR	

RESISTORS

Ref. No.	Part No.	Part Name & Description	Remarks
R2501	ERJ14YJ1R0U	MGF CHIP 1/4W 1	
R2502	ERJ14YJ1R0U	MGF CHIP 1/4W 1	
R2505	ERJ6GEYJ242V	MGF CHIP 1/4W 2.4K	

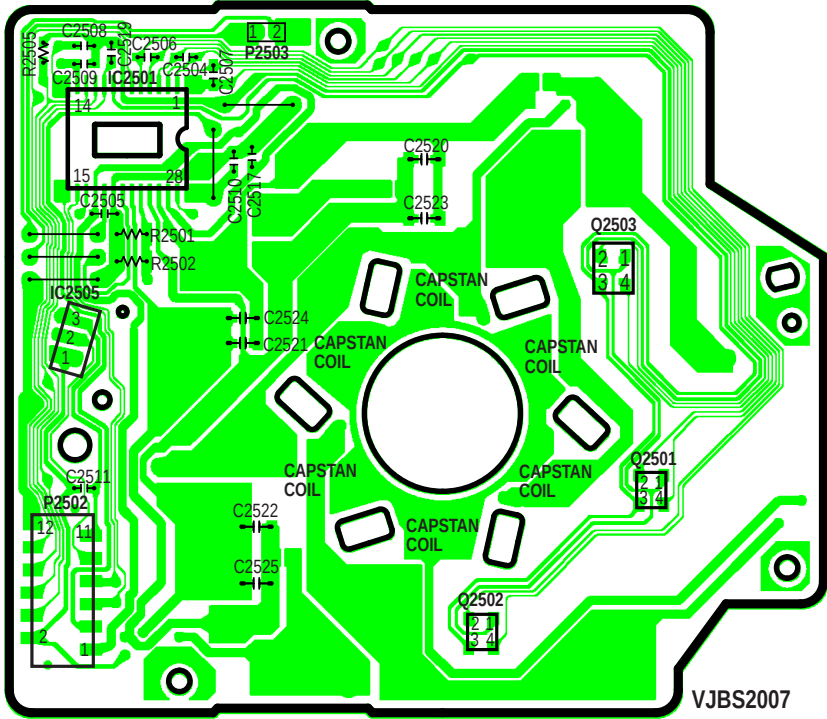
CAPACITORS

Ref. No.	Part No.	Part Name & Description	Remarks
C2504	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C2506	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C2507	ECUV1H103ZFN	C CHIP 50V 0.01UF	
C2508	ECUV1E104KBN	C CHIP 25V 0.1UF	
C2509	ECUV1E104KBN	C CHIP 25V 0.1UF	
C2510	ECUV1E104KBN	C CHIP 25V 0.1UF	
C2511	ECUV1E104ZFN	C CHIP 25V 0.1UF	
C2517	VCUSQAE225ZF	C CHIP 25V 2.2UF	
C2519	ECUV1H102KBN	C CHIP 50V 1000PF	
C2520	VCUSQAE225ZF	C CHIP 25V 2.2UF	
C2521	VCUSQAE225ZF	C CHIP 25V 2.2UF	
C2522	VCUSQAE225ZF	C CHIP 25V 2.2UF	

MISCELLANEOUS

Ref. No.	Part No.	Part Name & Description	Remarks
491	XYN2+J7	SCREW W/WASHER,STEEL	
731(IC2505)	EZMPS300F12	MR HEAD	
732(P2502)	LSJS0097	CONNECOR 12P	
733	LSMA0385	BACK PLATE,STEEL	

CAPSTAN STATOR C.B.A. VEMS0344



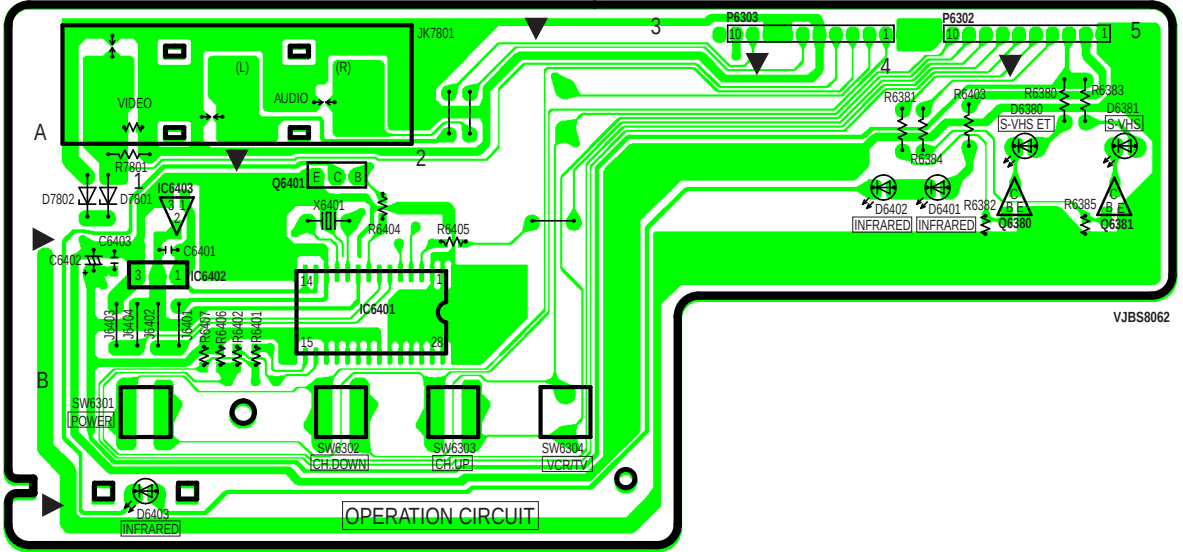
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST FOR PROPER PARTS CONTENT.

NOTE:
WHEN INSTALLING THE IC2501(AN3846SC) OR CAPSTAN STATOR C.B.A.,
BE SURE TO APPLY SILICON GREASE(VFK1301). REFER TO "CAPSTAN STATOR C.B.A."
OF MACHANISM SECTION IN DISASSEMBLY/ASSEMBLY PROCEDURES.

NOTE:
THE FOLLOWING PARTS ON THE CAPSTAN STATOR C.B.A. ARE NOT SUPPLIED SEPARATELY.
PLEASE ORDER AND REPLACE WITH THE CIRCUIT BOARD ASSEMBLY INSTEAD OF INDIVIDUAL PARTS.
(Q2501, Q2502, Q2503, CAPSTAN COIL)

OPERATION C.B.A. VEPS8062A (A,B)



NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

NOTE:
CIRCUIT BOARD LAYOUT SHOWS COMPONENTS INSTALLED FOR VARIOUS MODELS.
FOR PROPER PARTS CONTENT FOR THE MODEL YOU ARE SERVICING,
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST.

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.

- Important safety notice**
Components identified by the sign  have special characteristics important for safety. When replacing any of these components. Use only the specified parts.
- Do not use the part number shown on this drawing for ordering.
The correct part number and part value is shown in the parts list, and may be slightly different or amended since this drawing was prepared.
- Use only original replacement parts:
To maintain original function and reliability of repaired units, use only original replacement parts which are listed with their part numbers in the parts list section of the service manual.
- Parts different in shape or size may be used.
However, only interchangeable parts will be supplied as service replacement parts.
- Test point information
 ① :Test point with a jumper wire across a hole in P.C.B.
 :Test point with a component lead on the foil side.
 :Test point with no test pin.
 :Test point with a test pin.

Schematic Diagram Notes

- Indication for Zener Voltage of Zener Diodes
The Zener Voltage of Zener Diodes are indicated as such on Schematic Diagrams.

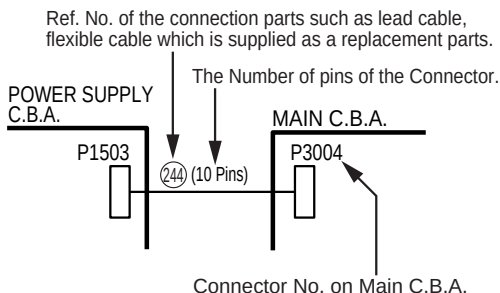
Example:

(6.2V).....Zener Voltage

- How to identify Connectors
Each connector is labeled with a Connector No. and Pin No. Indicating what it is connected to, in other words, its counter part.
Use the interconnection schematic diagram to find the connection between associated connectors.

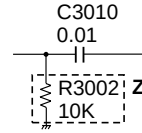
Example:

The connections between C.B.A.s are shown below.



- Parts enclosed in dashed lines marked "Z" are not used in any models included in this service manual.

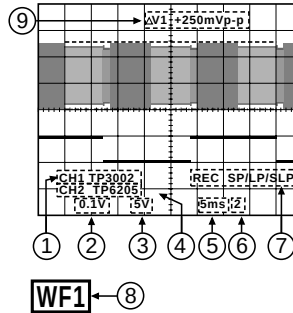
Example:



- The part number shown on this drawing is only main part number, except for safety parts. Be sure to make your orders of replacement parts according to the parts list.

Signal Waveform Note

How to read Signal Waveform



- Connecting Point
- Volts/Div
- Volts/Div
- Connecting Point
- Time/Div
- Trigger Channel of the scope
(1:CH1,2:CH2)
- Operation Mode of VCR
- Waveform Point on Schematic
- $\Delta V1$:Peak to Peak

Voltage Chart Note

Voltage Measurement

- Color bar signal in SP mode.
- :Unmeasurable or not necessary to measure.

Circuit Board Layout Note

Circuit Board Layout shows components installed for various models.

For proper parts content for the model you are servicing, please refer to the schematic diagram and parts list.

NOTE:

Circuit Board Layout includes components which are not used.

COMPARISON CHART OF MODELS & MARKS

MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C
Not Used	Z

Note : Refer to item 3 of Schematic Diagram Notes for mark "Z".

There are 2 types of Main C.I.

VEPS6073HA is used in early products and has been

The parts used for each Main C.B.A. are as follows.

IC60
PST
/XC61
/IC60
RES

NOTE

MODEL	MARK

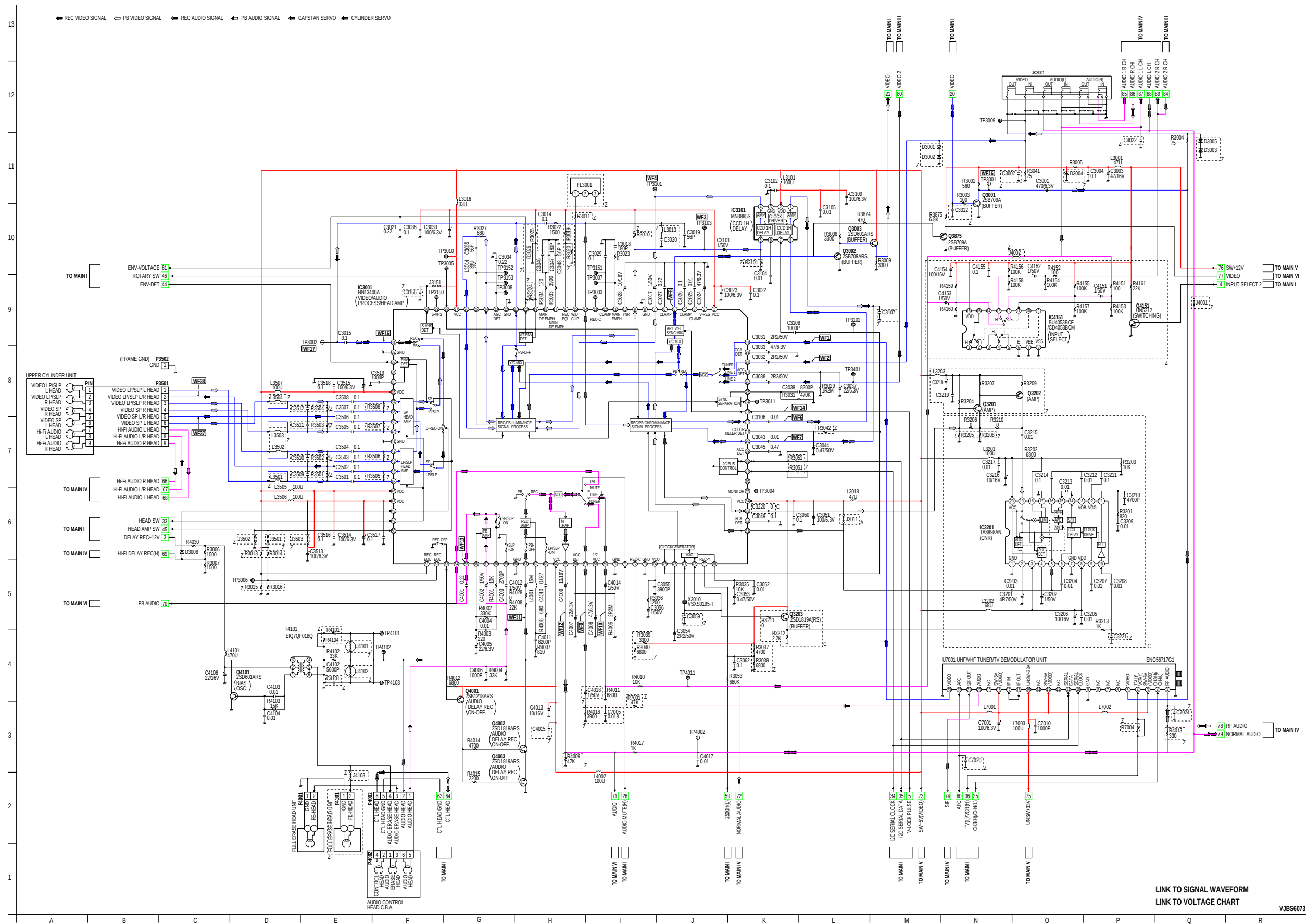
OUT IN	SCAN 1 PIN 93	SCAN 2 PIN 94
DATA 8 BIN 10	—	REC TIME

OUT	SCAN 1	S
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Year	1990	1995	2000	2005	2010	2015	2020
Population (millions)	1.2	1.5	1.8	2.1	2.4	2.7	3.0
GDP (billions of USD)	0.5	1.0	1.5	2.0	2.5	3.0	3.5
Urbanization (%)	30	40	50	60	70	80	90
Life expectancy (years)	55	60	65	70	75	80	85
Healthcare expenditure (USD per capita)	10	20	30	40	50	60	70
Education expenditure (USD per capita)	5	10	15	20	25	30	35
Renewable energy (%)	10	15	20	25	30	35	40
Carbon footprint (kg CO2e/capita)	0.5	1.0	1.5	2.0	2.5	3.0	3.5

FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

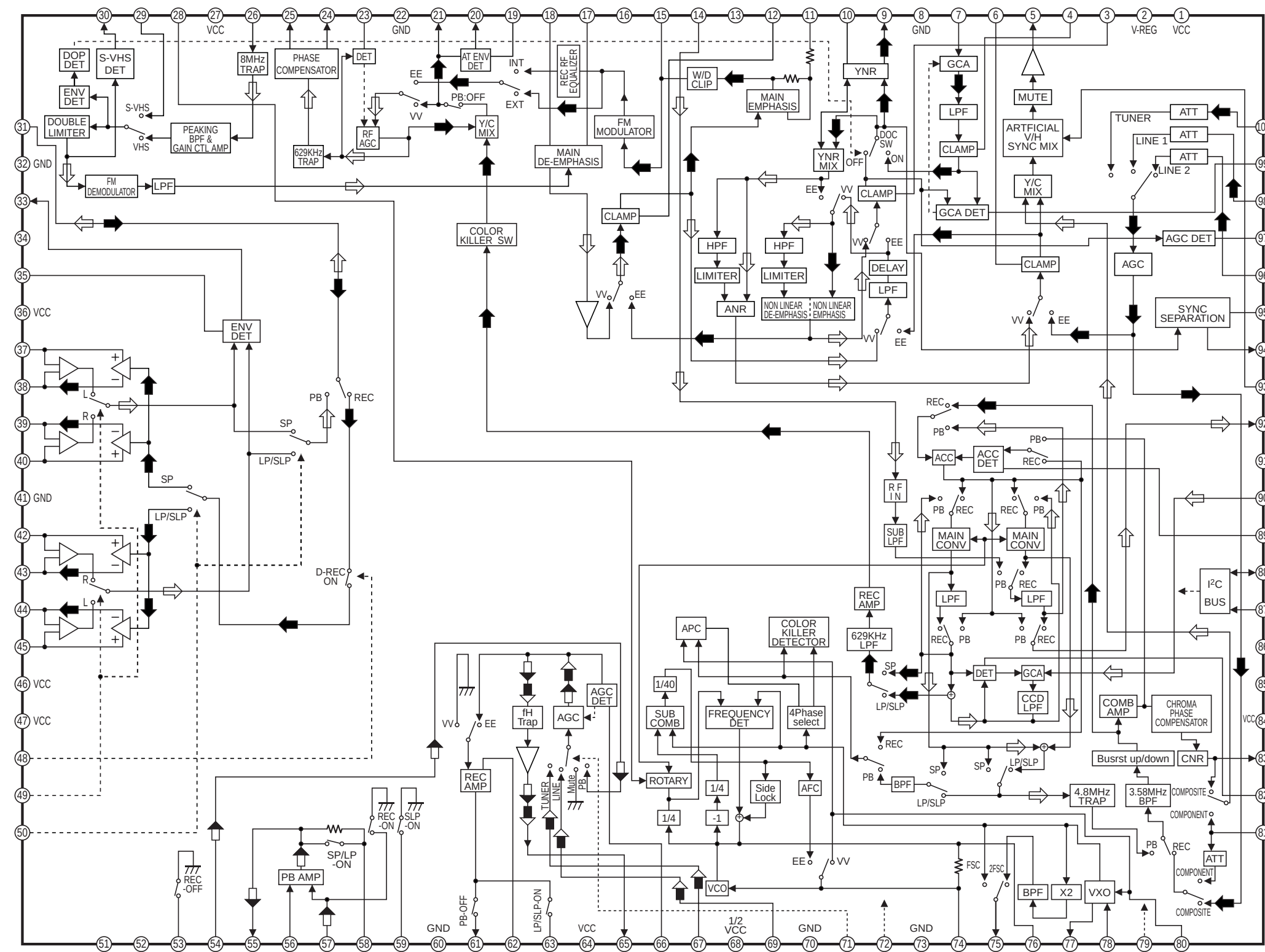
MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C
Not Used	Z



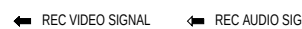
[LINK TO SIGNAL WAVEFORM](#)
[LINK TO VOLTAGE CHART](#)

VJBS6073

IC3001 VIDEO/AUDIO SIGNAL PROCESS / HEAD AMP IC- DETAIL BLOCK DIAGRAM, MN13400A



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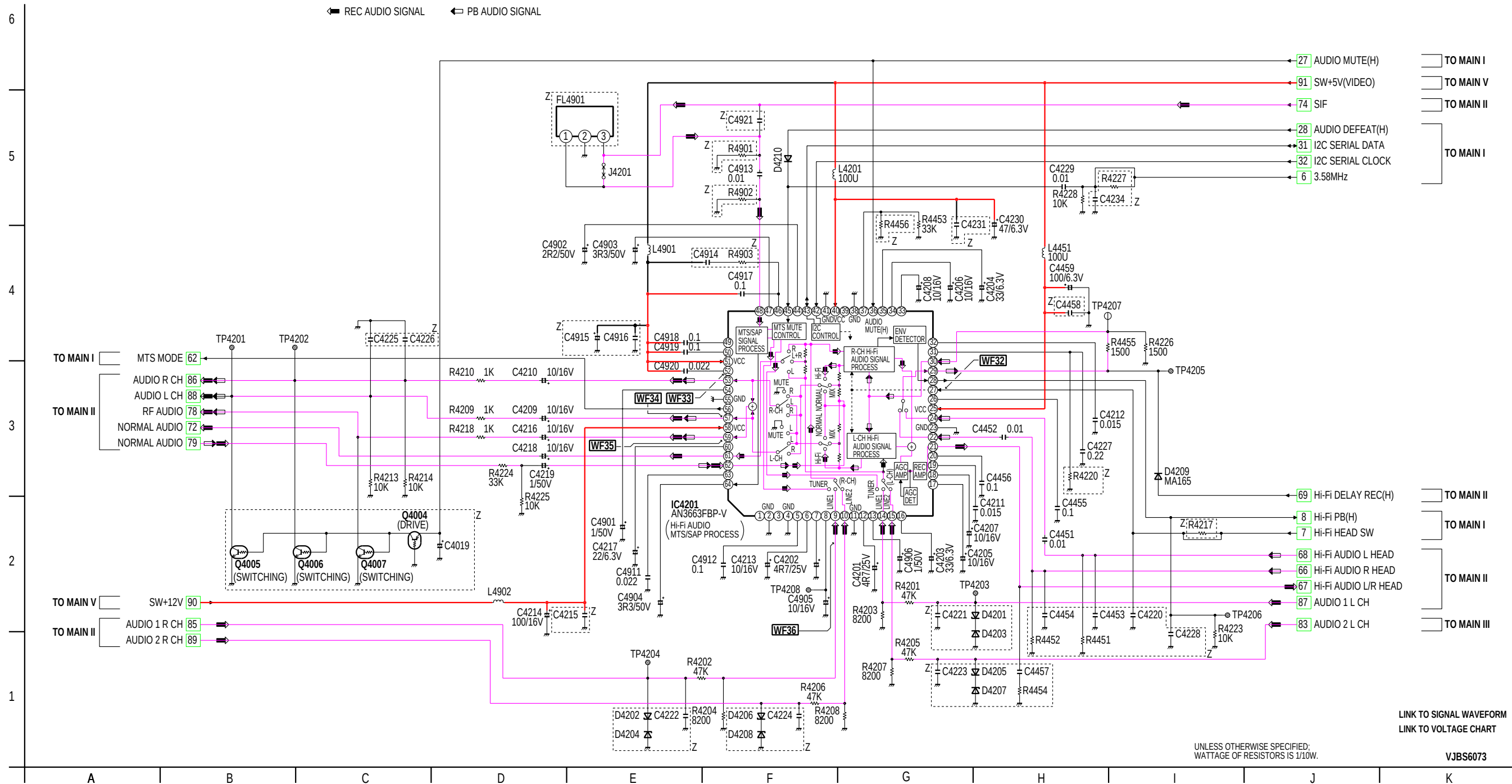


UNLESS OTHERWISE SPECIFIED;
SWITCHES IS EVQ11A09K.
PNP TRANSISTORS IS 2SB709A,
NPN TRANSISTORS IS 2SD601A AND
VJBS6073

MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C
Not Used	Z

FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C
Not Used	Z



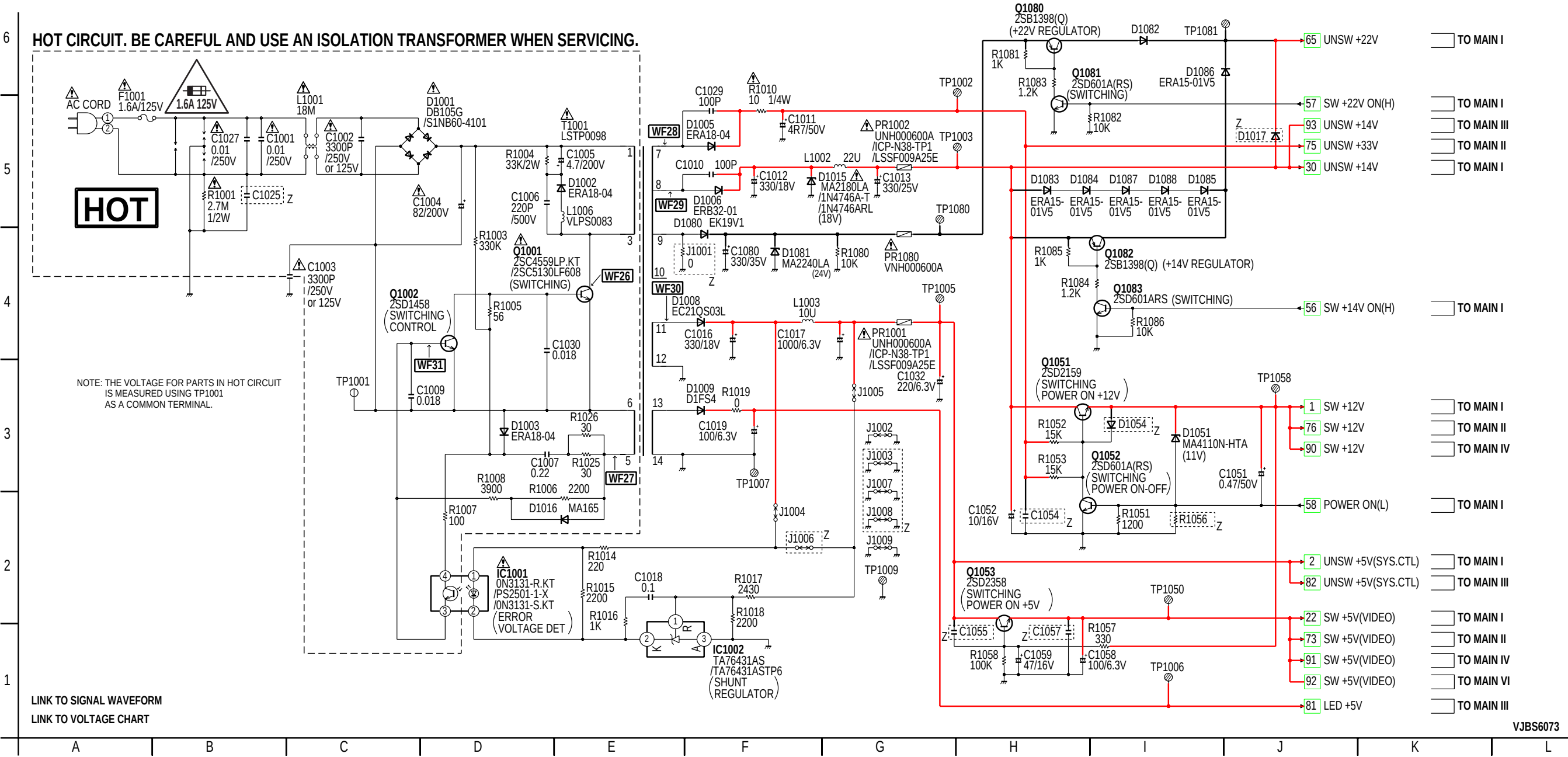
MAIN V (POWER SUPPLY) SCHEMATIC DIAGRAM (A, C)

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS	
MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C
Not Used	Z

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 1.6A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D'INCENDIE N'UTILISERQUE DES FUSIBLE DE MÊME
TYPE 1.6A 125V

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

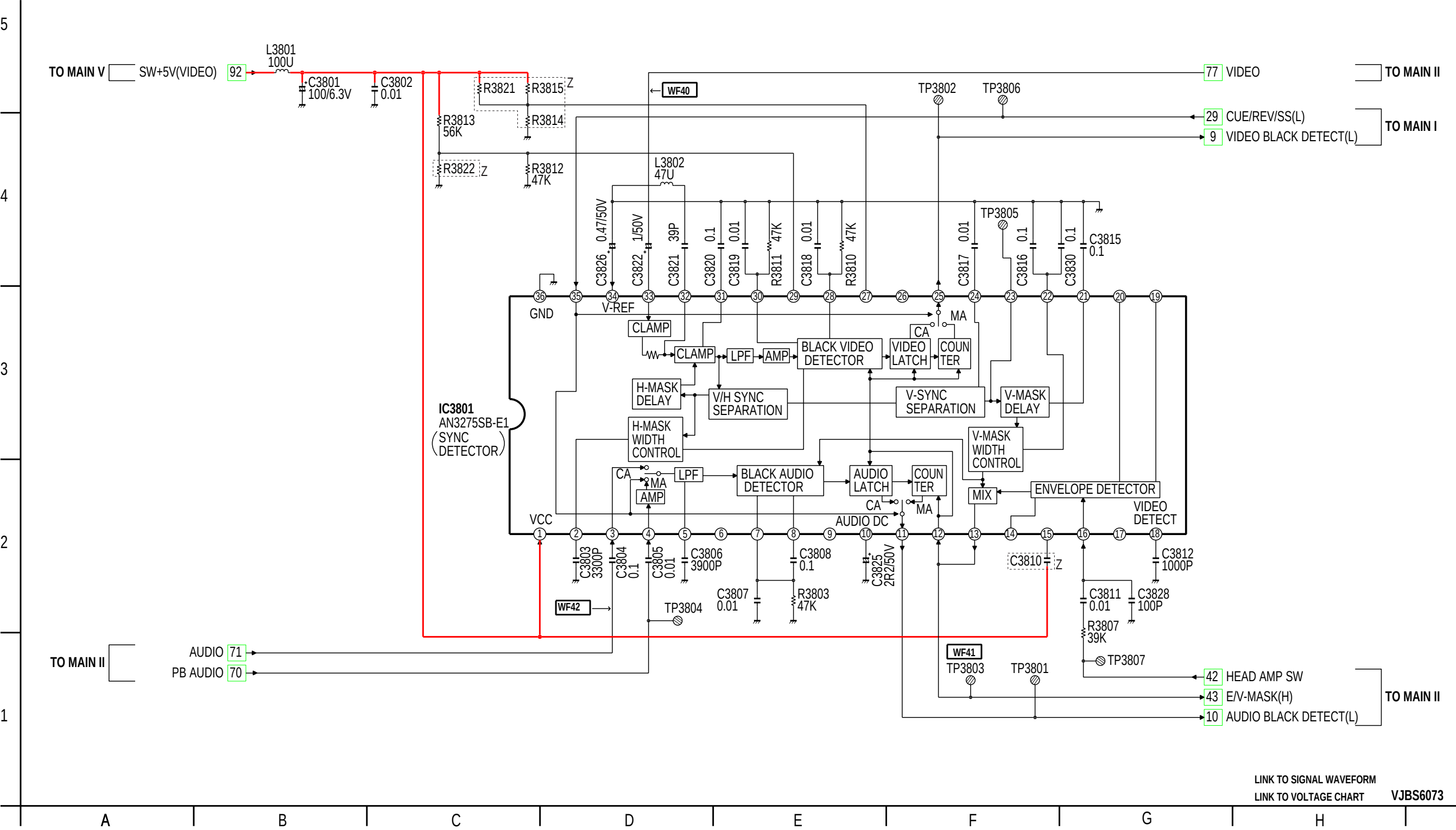


MAIN VI (ADVANCE) SCHEMATIC DIAGRAM (A, C)

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART
OF MODELS & MARKS

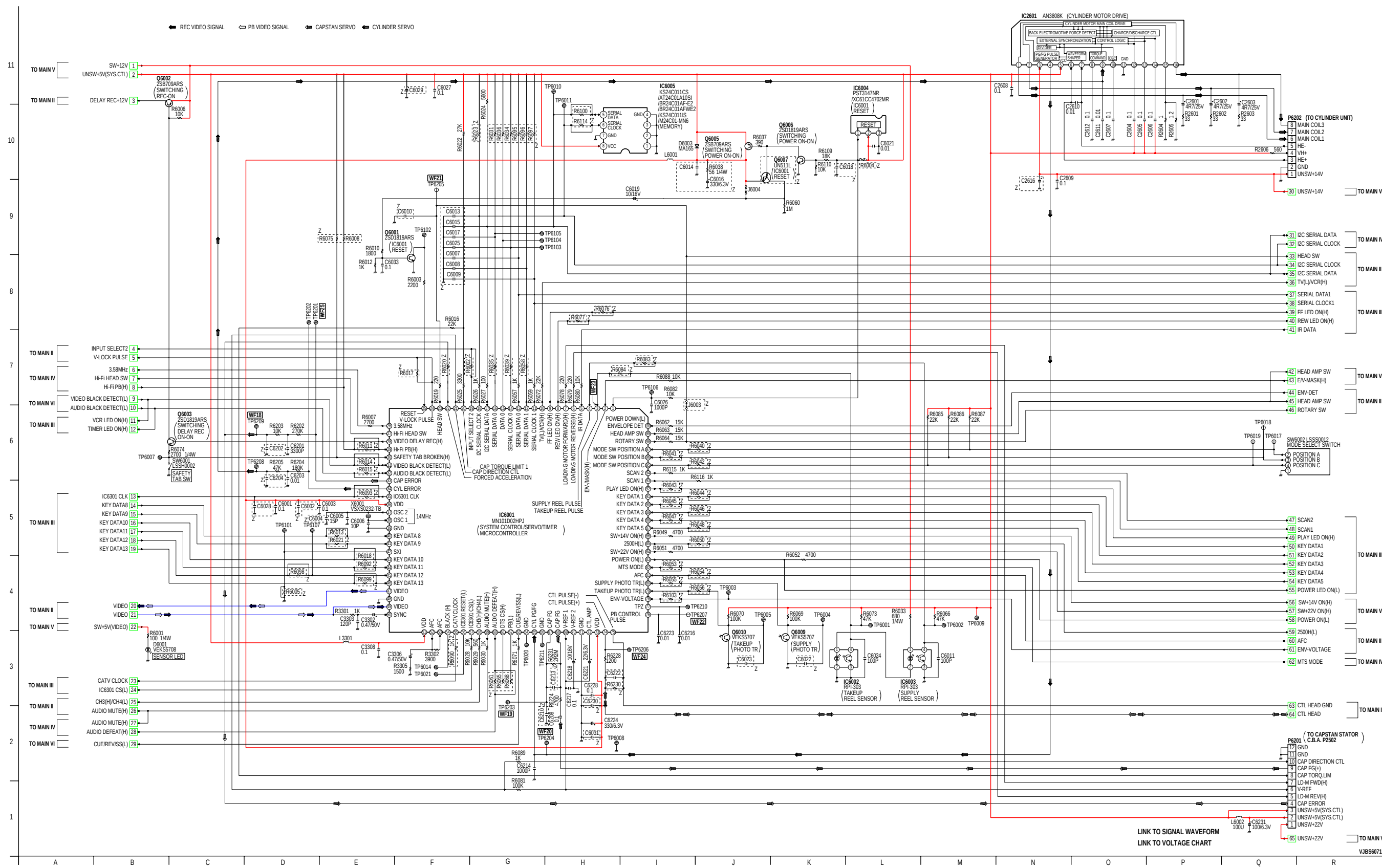
MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C
Not Used	Z



FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C
Not Used	Z

OUT IN	SCAN 1 PIN 93	SCAN 2 PIN 94
DATA 8 PIN40	—	STOP /EJECT
DATA 9 PIN 41	—	PLAY
DATA 10 PIN 43	—	CH UP
DATA 11 PIN 44	POWER	FF
DATA 12 PIN 45	VCR/TV	CH DOWN
DATA 13 PIN 46	REC /TIME	REW

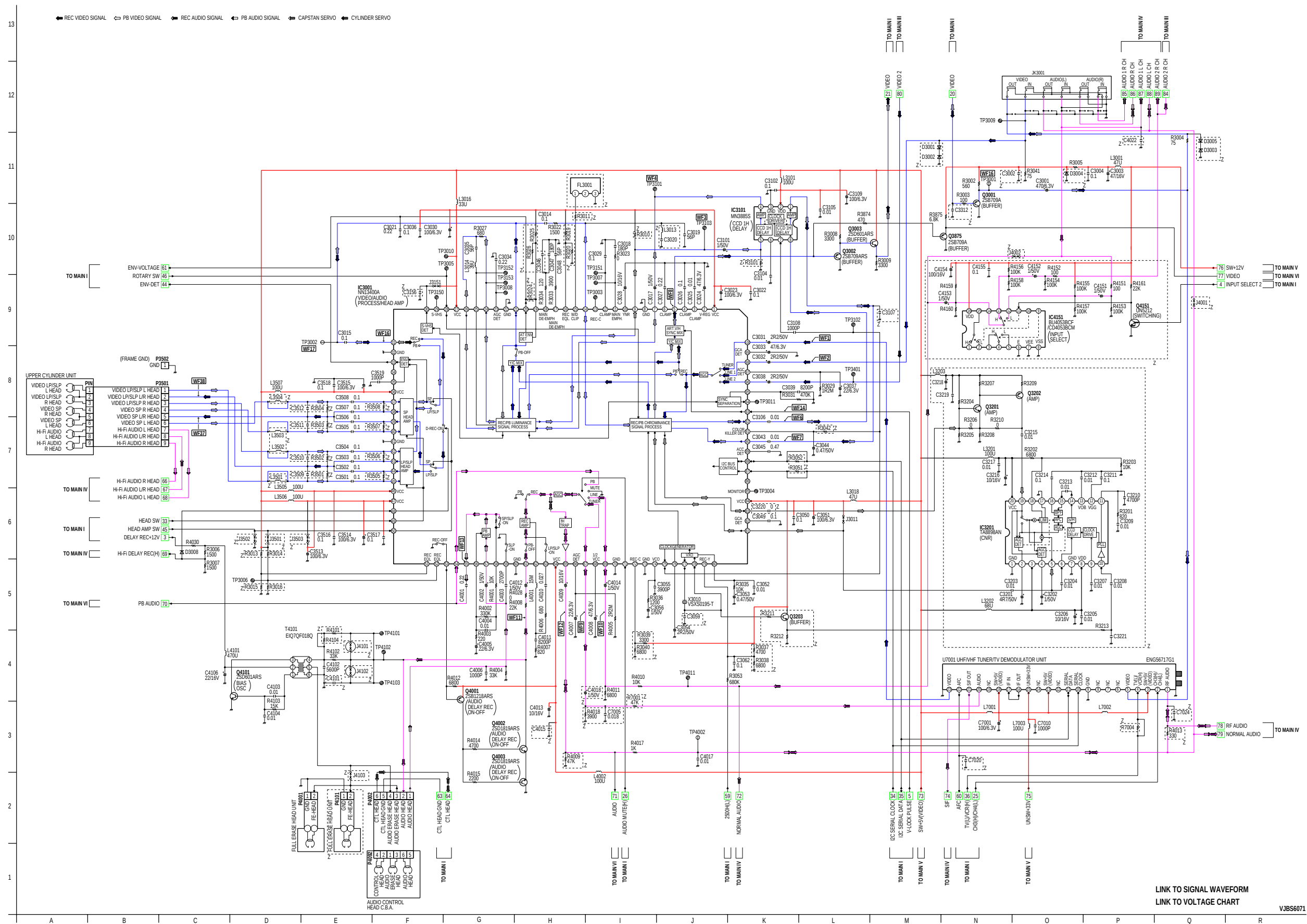


[LINK TO SIGNAL WAVEFORM](#)
[LINK TO VOLTAGE CHART](#)

VJBS6071

FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

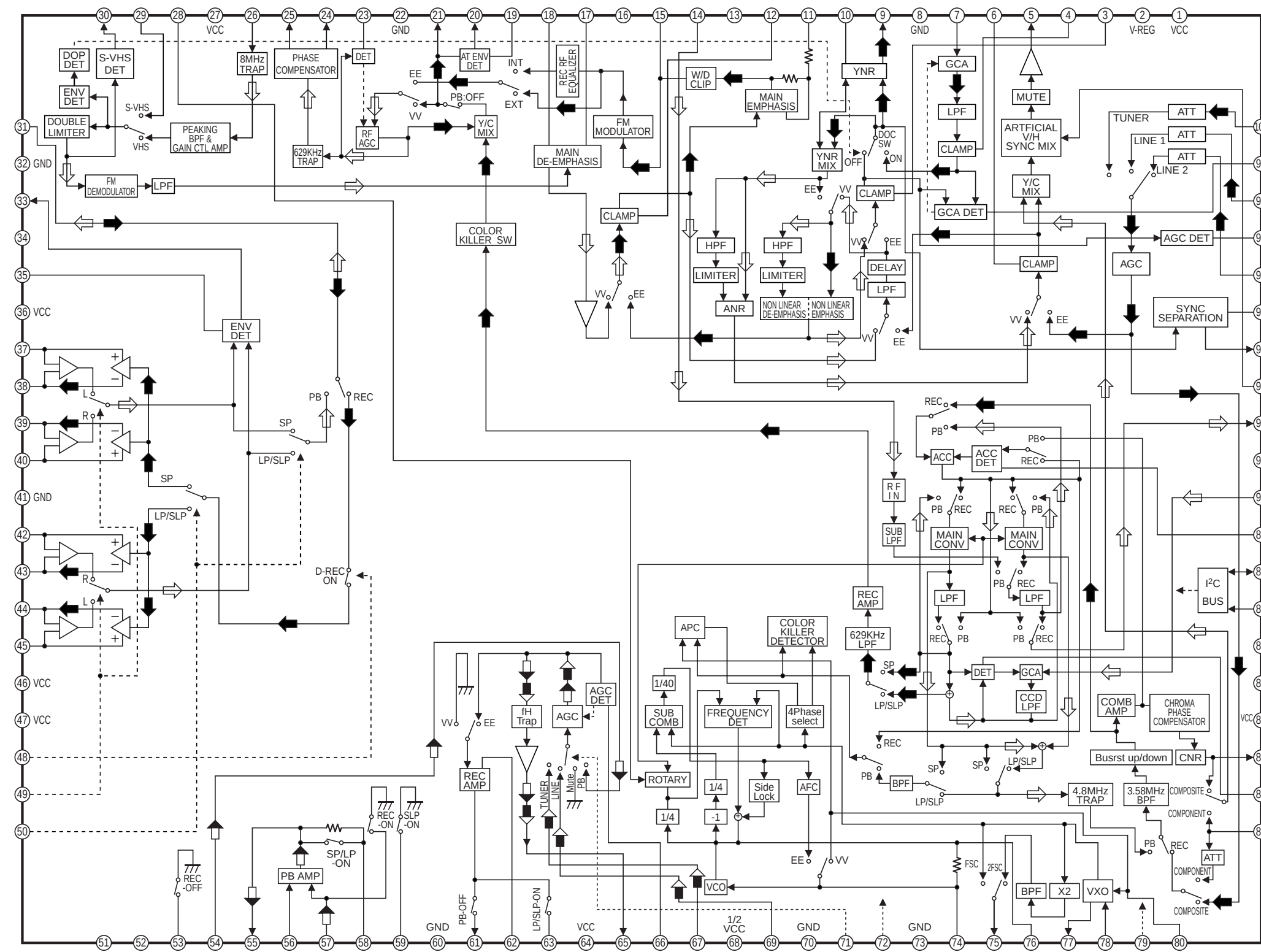
MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C
Not Used	Z



[LINK TO SIGNAL WAVEFORM](#)
[LINK TO VOLTAGE CHART](#)

VJBS6071

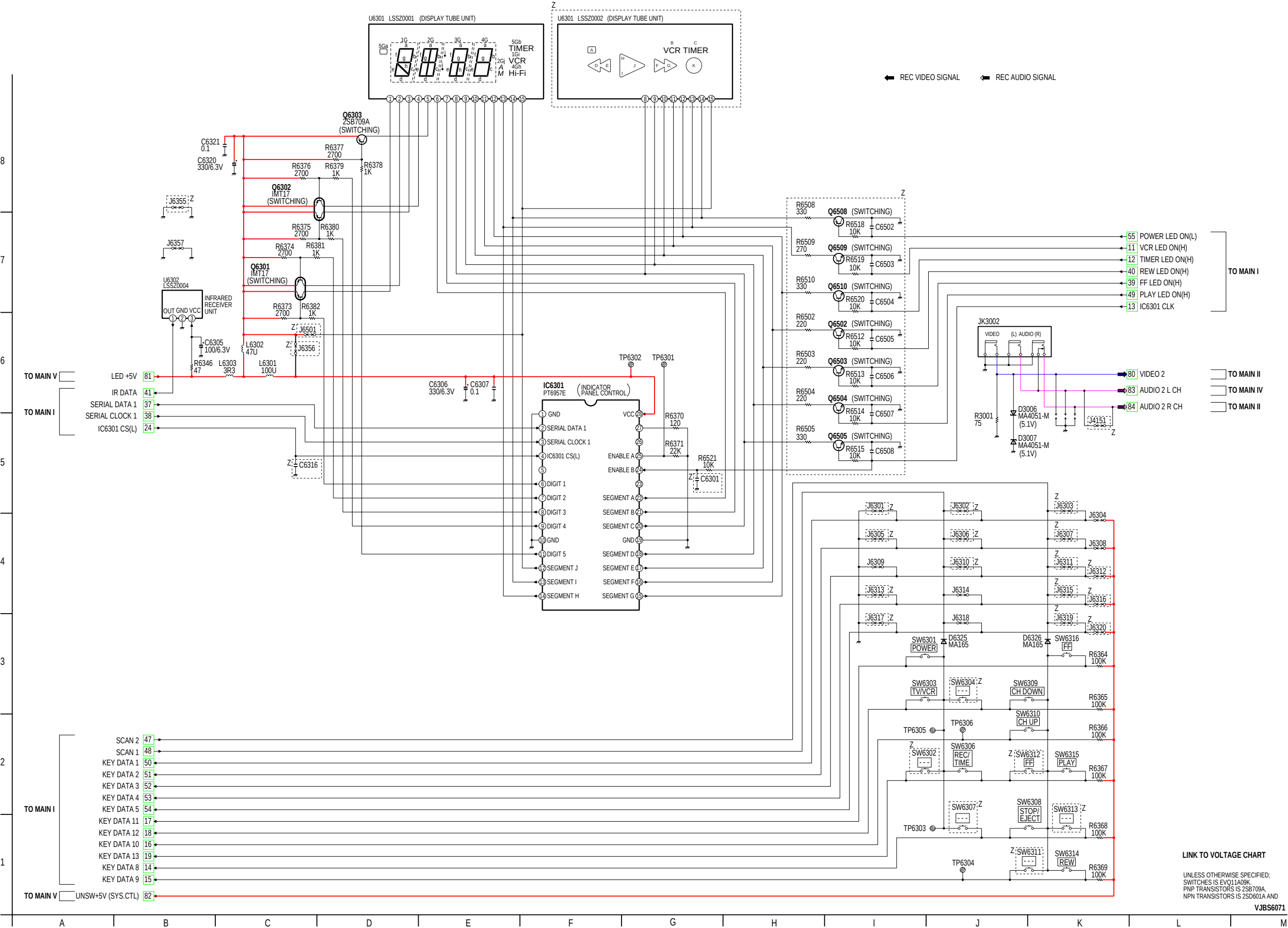
IC3001 VIDEO/AUDIO SIGNAL PROCESS / HEAD AMP IC-DETAIL BLOCK DIAGRAM, MN13400A



MAIN III (OPERATION) SCHEMATIC DIAGRAM (B)

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS	
MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C
Not Used	Z



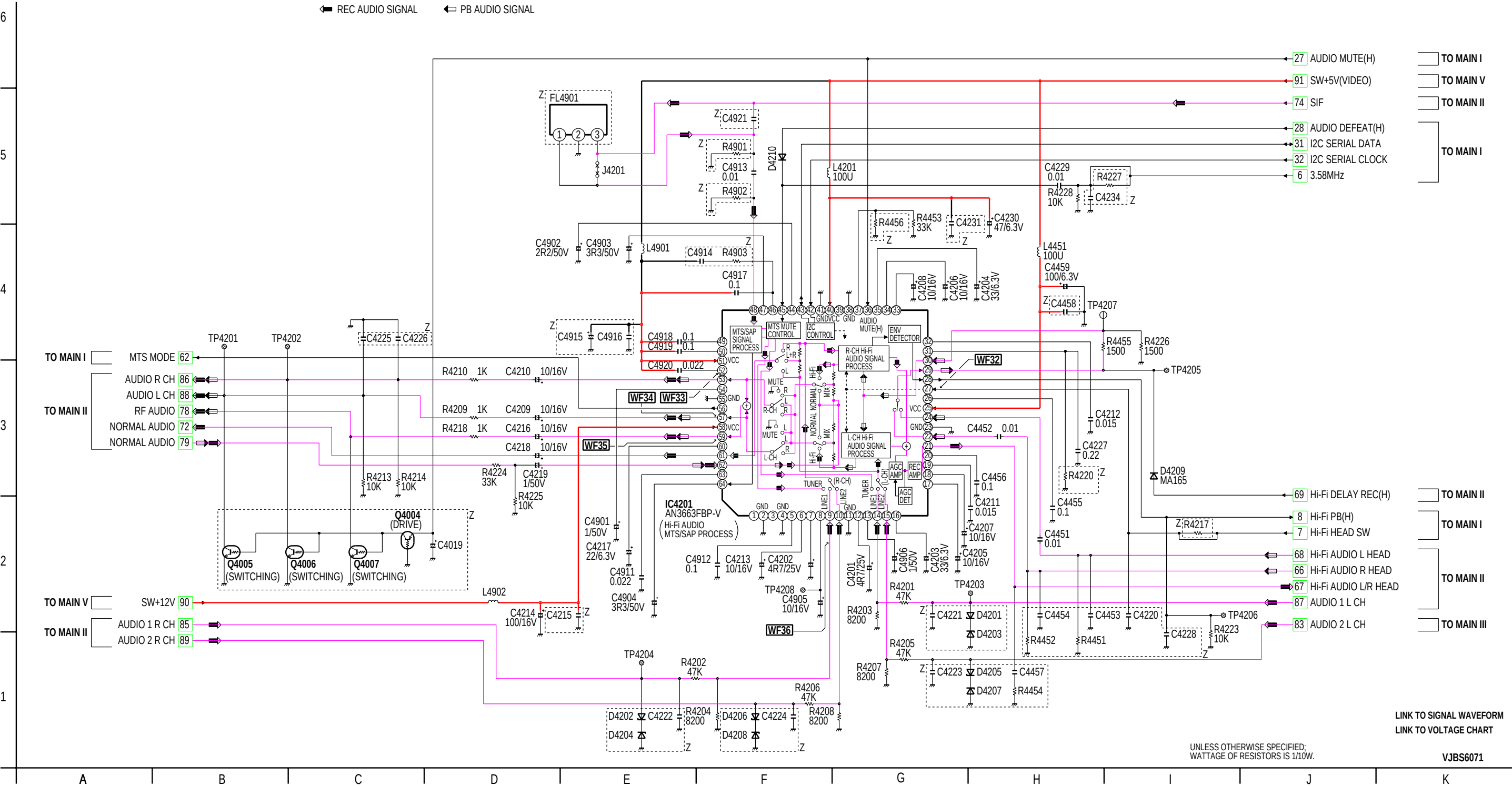
LINK TO VOLTAGE CHART

UNLESS OTHERWISE SPECIFIED;
SWITCHES IS EVQ1A09K.
PNP TRANSISTORS IS 2SB709A,
NPN TRANSISTORS IS 2SD601A AND

MAIN IV (Hi-Fi) SCHEMATIC DIAGRAM (B)

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS	
MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C
Not Used	Z



MAIN V (POWER SUPPLY) SCHEMATIC DIAGRAM (B)

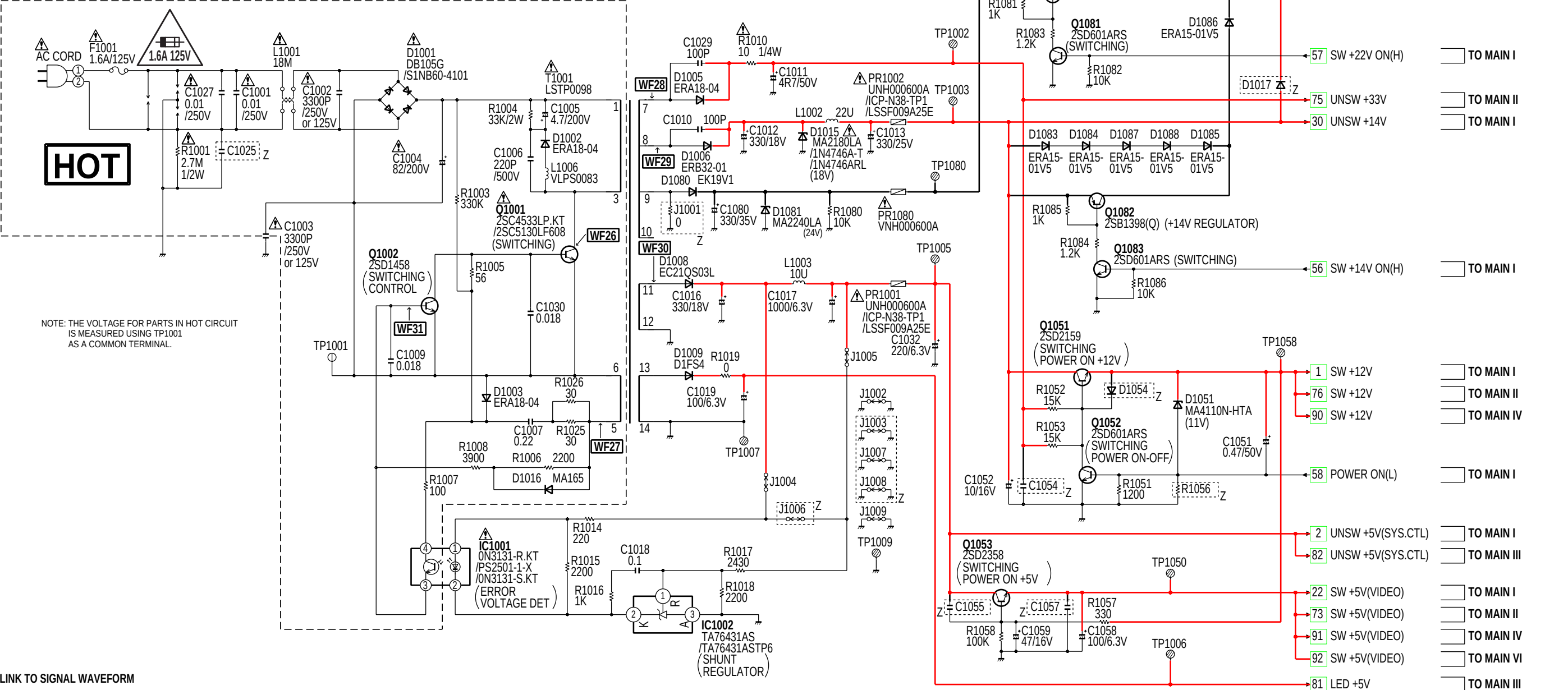
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES
REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS	
MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C
Not Used	Z

**CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 1.6A 125V FUSE.**
**ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D'INCENDIE N'UTILISER QUE DES FUSIBLE DE MÊME
TYPE 1.6A 125V**

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

HOT CIRCUIT. BE CAREFUL AND USE AN ISOLATION TRANSFORMER WHEN SERVICING



[LINK TO SIGNAL WAVEFORM](#)

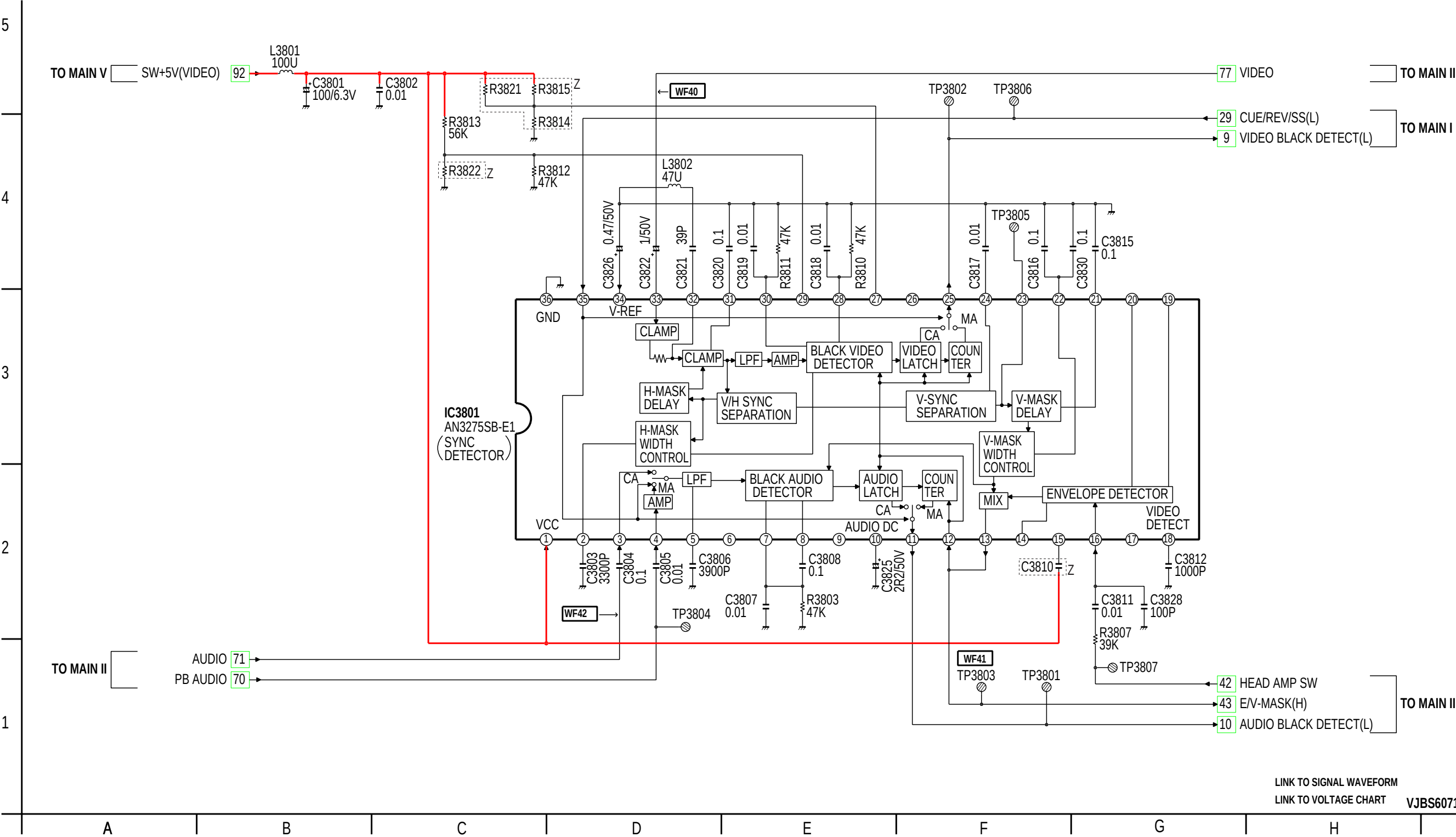
[LINK TO VOLTAGE CHART](#)

VJBS6071

MAIN VI (ADVANCE) SCHEMATIC DIAGRAM (B)

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

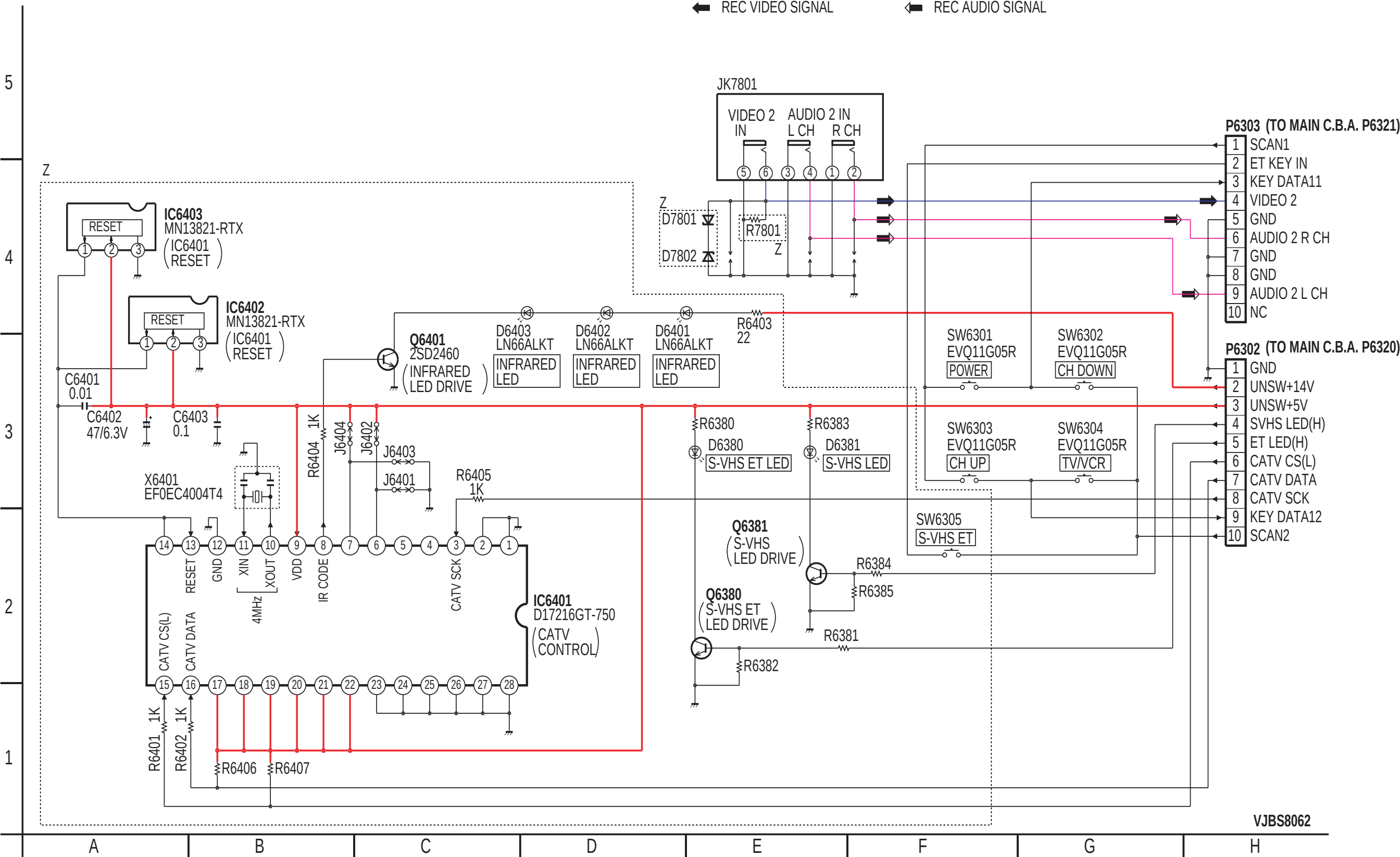
COMPARISON CHART OF MODELS & MARKS	
MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C
Not Used	Z



OPERATION SCHEMATIC DIAGRAM (A, C)

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS	
MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C
Not Used	Z



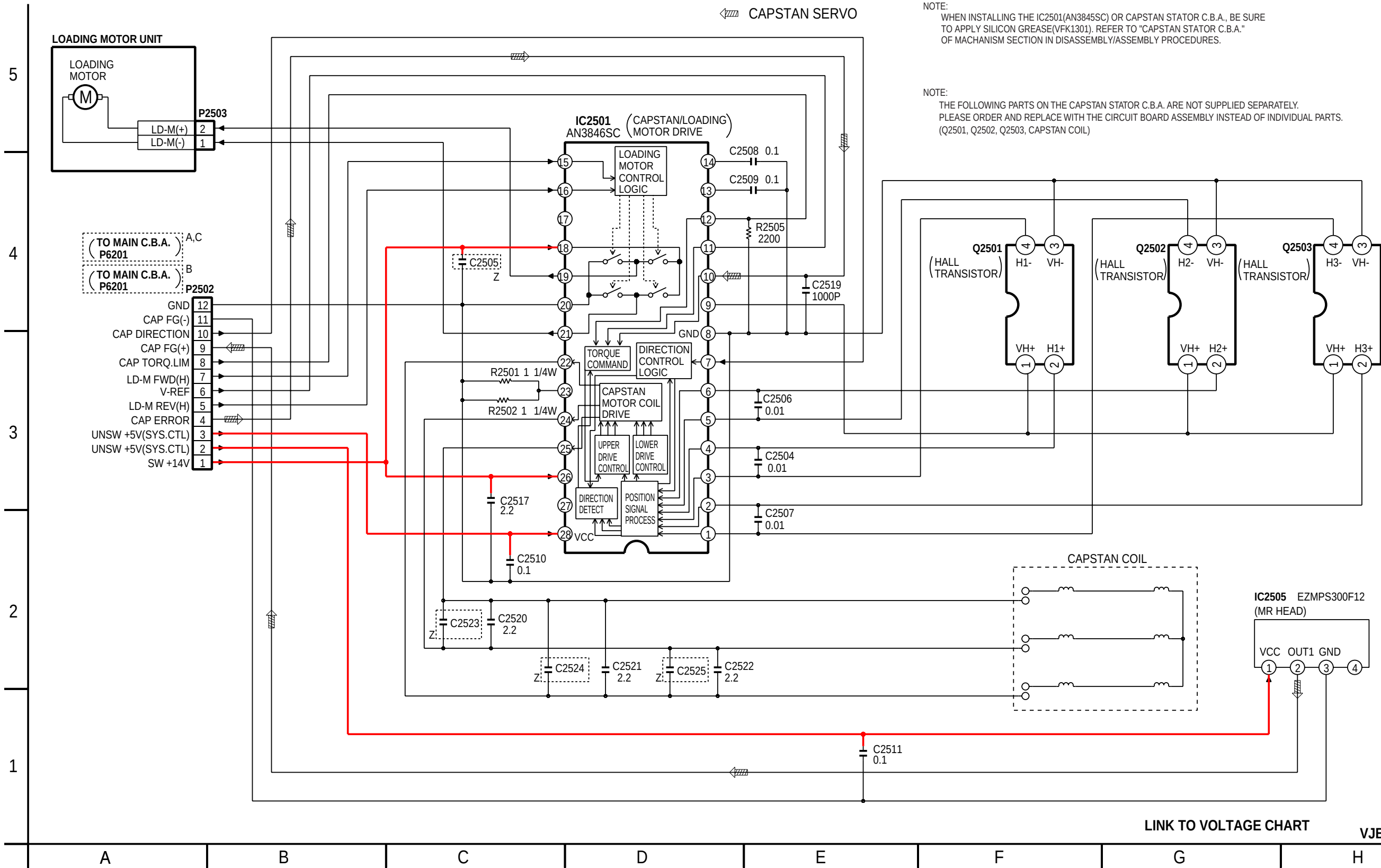
CAPSTAN STATOR SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS	
MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C
Not Used	Z

NOTE:
WHEN INSTALLING THE IC2501(AN3845SC) OR CAPSTAN STATOR C.B.A., BE SURE
TO APPLY SILICON GREASE(VFK1301). REFER TO "CAPSTAN STATOR C.B.A."
OF MACHANISM SECTION IN DISASSEMBLY/ASSEMBLY PROCEDURES.

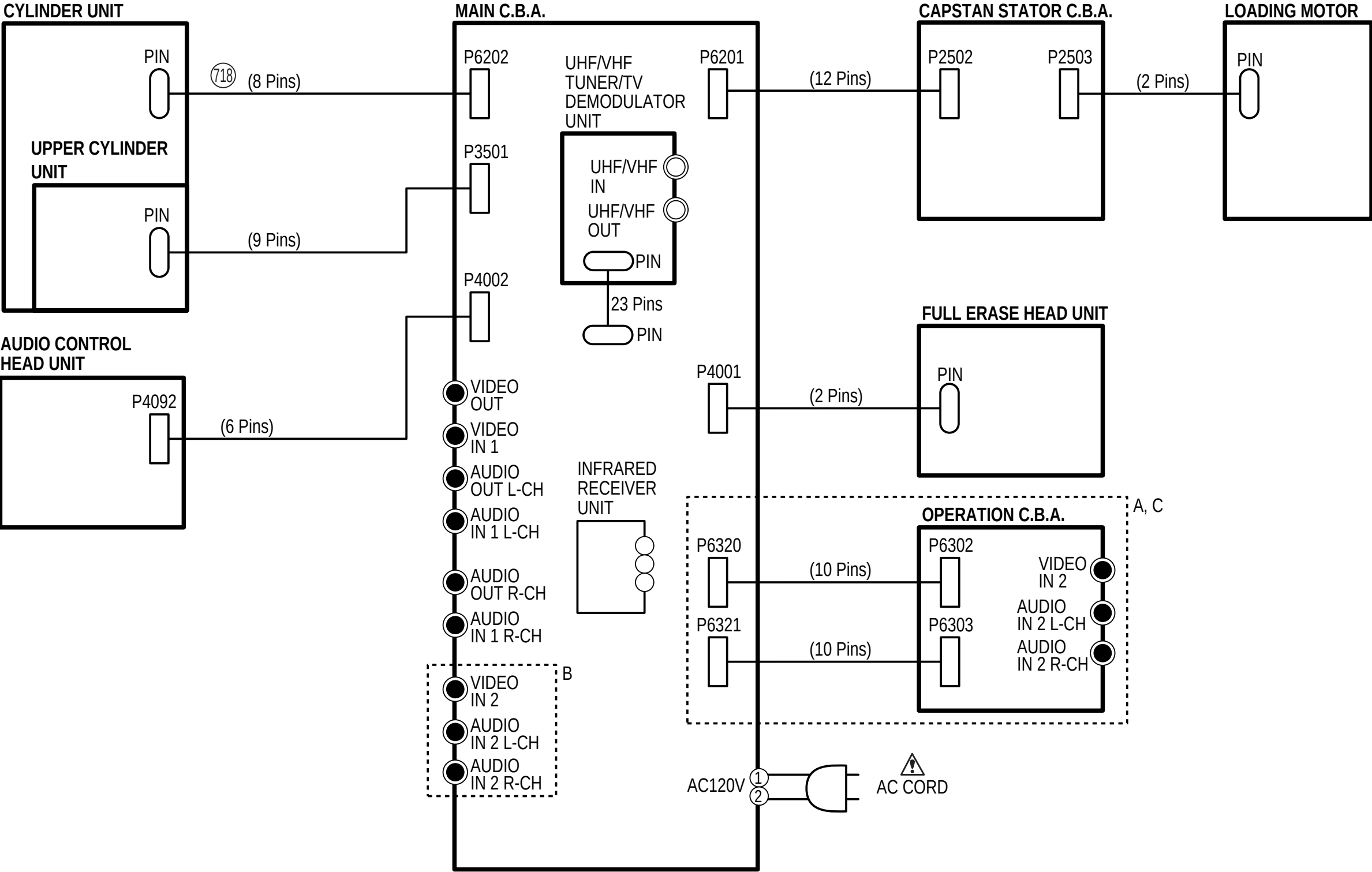
NOTE:
THE FOLLOWING PARTS ON THE CAPSTAN STATOR C.B.A. ARE NOT SUPPLIED SEPARATELY.
PLEASE ORDER AND REPLACE WITH THE CIRCUIT BOARD ASSEMBLY INSTEAD OF INDIVIDUAL PARTS.
(Q2501, Q2502, Q2503, CAPSTAN COIL)



INTERCONNECTION SCHEMATIC DIAGRAM

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS	
MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C
Not Used	Z





Omnivision **VHS**

Panasonic®

Video Cassette Recorder Operating Instructions

Model No. **PV-V4661-K**



Connections and Initial Setup Procedures are on pages 8 to 11.



VCR Plus+ and PlusCode are trademarks of Gemstar Development Corporation. The VCR Plus+ System is manufactured under license from Gemstar Development Corporation.



As an ENERGY STAR Partner, Panasonic has determined that this product or product model meets the ENERGY STAR guidelines for energy efficiency.

Please read these instructions carefully before attempting to connect, operate or adjust this product. Please save this manual.

LSQT0387A

**Initial Setup
(Connection)**

**Basic
Operation**

**Timer
Recording**

**Advanced
Operation**

**For Your
Information**

Important Safeguards and Precautions

FOR YOUR SAFETY, READ AND RETAIN ALL SAFETY AND OPERATING INSTRUCTIONS. HEED ALL WARNINGS IN THE MANUAL AND ON THE UNIT

INSTALLATION

1 POWER SOURCE CAUTION

Operate only from a power source indicated on the unit or in this manual. If necessary, have your Electric Utility Service Company or Video Products Dealer verify the power source in your home.

2 POLARIZED OR GROUNDING PLUG

As a safety feature, this Video product comes with either a polarized power cord plug (one blade is wider than the other), or a three-wire grounding type plug.

POLARIZED PLUG CAUTION:

This plug will only fit into an outlet one way. If you cannot fully insert the plug, try reversing it. If it still will not fit, have an electrician install the proper wall outlet. Do not defeat the safety feature by tampering with the plug.

GROUNDING PLUG CAUTION:

This plug will only fit into a three-hole grounding outlet. If necessary, have an electrician install the proper outlet. Do not defeat the safety feature by tampering with the plug.

3 POWER CORD

Make sure power cords are routed so that they are not likely to have anything rest on them, roll over them, or be in the way of walking traffic. If an extension cord is used, make sure it also has either a polarized or grounded plug and that the cords can be securely connected. Frayed cords, damaged plugs, and damaged or cracked wire insulation are hazardous and should be replaced by a qualified service technician. Overloaded outlets and extension cords are fire hazards and should be avoided.

4 DO NOT BLOCK VENTILATION HOLES

Ventilation openings in the cabinet release heat generated during operation. If they are blocked, heat build-up inside the unit can cause failures that may result in a fire hazard or heat damage to cassettes. For protection, follow these rules:

- Never cover ventilation slots or the unit while in use, or operate the unit when placed on a bed, sofa, rug, or other soft surface.
- Avoid built-in installation, such as a book case or rack, unless proper ventilation is provided.

5 AVOID EXTREMELY HOT LOCATIONS OR SUDDEN TEMPERATURE CHANGES

Do not place the unit over or near any kind of heater or radiator, in direct sunlight, inside a closed vehicle, etc.. Do not move the unit suddenly between areas of extreme temperature variation. If the unit is suddenly moved from a cold place to a warm place, moisture may condense in the unit and on the tape.

6 TO AVOID PERSONAL INJURY

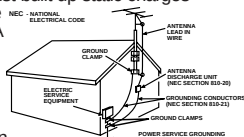
- Do not place unsecured equipment on a sloping surface.
- Do not place this unit on any support that is not firm, level, and adequately strong. The unit could fall causing serious injury to a child or adult and damage to the unit.
- An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.
- Carefully follow all operating instructions and use the manufacturer's recommended accessories when operating this unit or connecting it to any other equipment.



OUTDOOR ANTENNA INSTALLATION

1 SAFE ANTENNA AND CABLE CONNECTION

If an outside antenna or cable system is connected to the equipment, be sure the antenna or cable system is grounded so as to provide some protection against built up static charges and voltage surges. Part 1 of the Canadian Electrical Code, in USA Section 810 of the National Electrical Code, ANSI/NFPA 70, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes and requirements for the grounding electrode.



2 KEEP ANTENNA CLEAR OF HIGH VOLTAGE POWER LINES OR CIRCUITS

An outside antenna system should be located well away from power lines, electric light or power circuits and where it will never come into contact with these power sources if it should happen to fall. When installing an outside antenna, extreme care should be taken to avoid touching power lines, circuits or other power sources as this could be fatal. Because of the hazards involved, antenna installation should be left to a professional.

USING THE VIDEO UNIT

If the unit has been in storage or moved to a new location, refer first to the INSTALLATION section of these safeguards.

1 KEEP THIS VIDEO UNIT AWAY FROM WATER OR MOISTURE OF ANY KIND.

2 IF EQUIPMENT IS EXPOSED TO RAIN, MOISTURE, OR STRONG IMPACT, unplug the unit and have it inspected by a qualified service technician before use.

3 DURING AN ELECTRICAL STORM

During a lightning storm, whether indoors or outdoors, or before leaving the unit unused for extended periods of time, disconnect all equipment from the power source as well as the antenna and cable system.

4 WHEN THE UNIT IS PLUGGED IN

- Never expose the unit to rain or water. DO NOT OPERATE if liquid has been spilled into the unit. Immediately unplug the unit, and have it inspected by a service technician. Fire and shock hazards can result from electrical shorts caused by liquid contact inside.
- Never drop or push any object through openings in the unit. Some internal parts carry hazardous voltages and contact can cause electric shock or fire hazard.
- Avoid placing the unit directly above or below your TV set as this may cause electrical interference. Keep all magnets away from electronic equipment.

5 USING ACCESSORIES

Use only accessories recommended by the manufacturer to avoid risk of fire, shock, or other hazards.

6 CLEANING THE UNIT

Unplug the unit. Then, use a clean, dry, chemically untreated cloth to gently remove dust or debris. DO NOT USE cleaning fluids, aerosols, or forced air that could over-spray, or seep into the unit and cause electrical shock. Any substance such as wax, adhesive tape, etc. may mar the cabinet surface. Exposure to greasy, humid, or dusty areas may adversely affect internal parts.

SERVICE

1 DO NOT SERVICE THIS PRODUCT YOURSELF

If, after carefully following the detailed operating instructions, this Video product does not operate properly, do not attempt to open or remove covers, or make any adjustments not described in the manual. Unplug the unit and contact a qualified service technician.

2 IF REPLACEMENT PARTS ARE REQUIRED

Make sure the service technician uses only parts specified by the manufacturer, or those having the same safety characteristics as the original parts. The use of unauthorized substitutes may result in fire, electric shock, or other hazards.

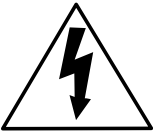
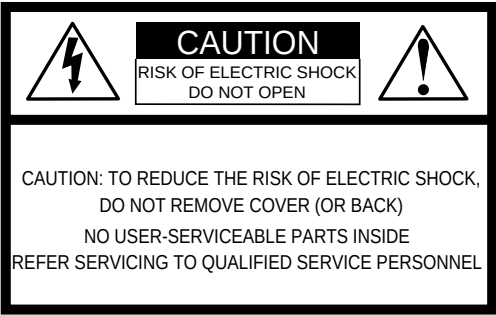
3 HAVE THE SERVICE TECHNICIAN PERFORM A SAFETY CHECK

After any service or repairs to the unit, request the service technician to conduct a thorough safety check as described in the manufacturer's service literature to insure that the video unit is in safe operating condition.

Safety Precautions

Warning: To prevent fire or shock hazard, do not expose this equipment to rain or moisture.

CAUTION: To prevent electric shock, match wide blade of plug to wide slot, fully insert.



This symbol warns the user that uninsulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.



This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included. Therefore, it should be read carefully in order to avoid any problems.

Note to CABLE system installer:
This reminder is provided to call the CABLE system installer’s attention to Article 820-40 of the NEC in USA (and to the Canadian Electrical Code in Canada) that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

FCC Warning: Any unauthorized changes or modifications to this equipment would void the user’s authority to operate.

Before Using

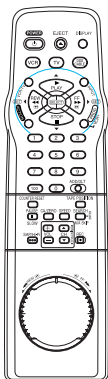
Congratulations

on your purchase of one of the most sophisticated and reliable products on the market today. Used properly, it will bring you years of enjoyment. Please fill in the information below. The serial number is on the tag located on the back of your VCR.

- Date of Purchase _____
- Dealer Purchased From _____
- Dealer Address _____
- Dealer Phone No. _____
- Model No. _____
- Serial No. _____

Accessories

- ☐ Remote Control
LSSQ0292



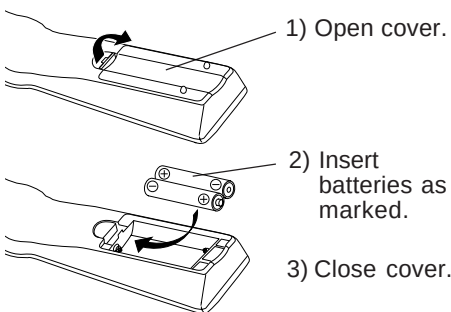
- ☐ Batteries 2 "AA"



- ☐ RF Coaxial Cable
VJAS0196



Loading the Batteries

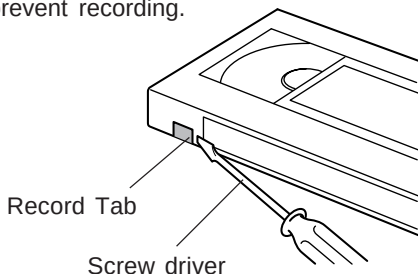


☐ **Battery replacement caution**

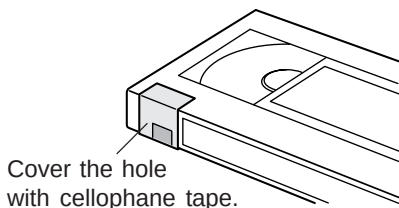
- Do not mix old and new batteries.
- Do not mix alkaline with manganese batteries.

Prevent Accidental Tape Erasure

Break off the tab to prevent recording.



To record again



Record/ Playback Time

Only use tapes with the **VHS** mark in this unit.

Tape Speed Setting	Type of Video Cassette		
	T60	T120	T160
SP (Standard Play)	1 Hour	2 Hours	2 Hours 40 Minutes
LP (Long Play)	2 Hours	4 Hours	5 Hours 20 Minutes
SLP (SuperLongPlay)	3 Hours	6 Hours	8 Hours

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Initial Setup
(Connection)

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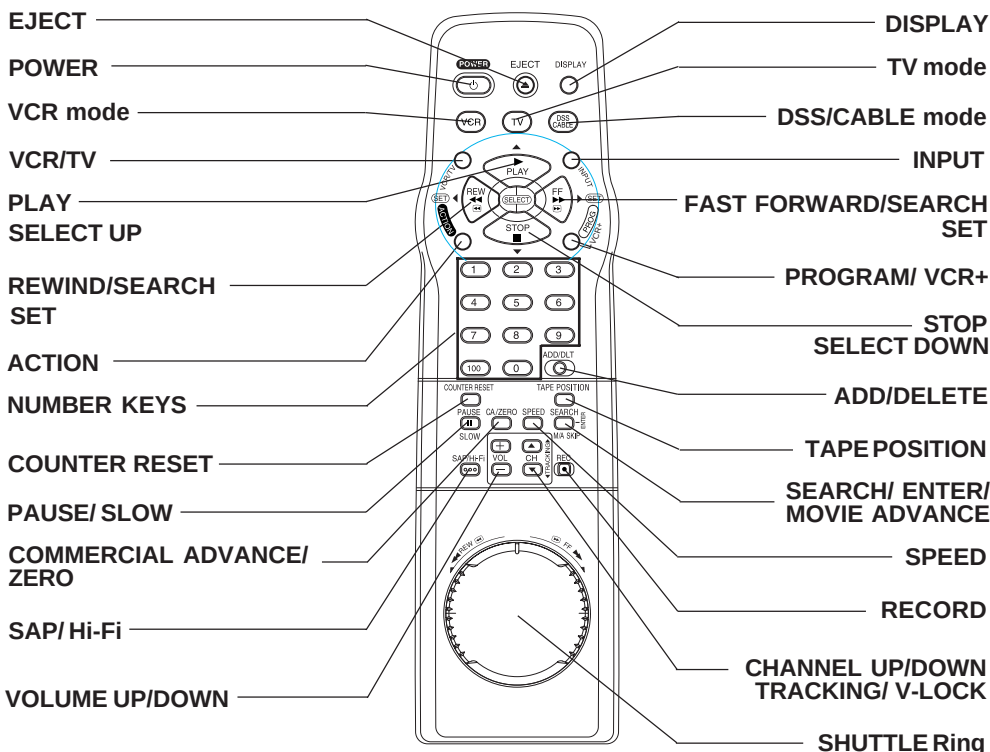
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Location of Controls

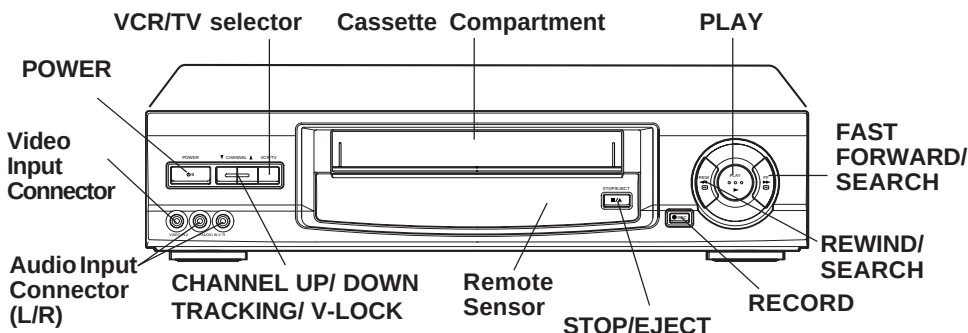
Remote control Buttons



Tower Universal Shuttle Remote Control

EJECT button: Press to eject tape from VCR. If EJECT is pressed during record, VCR will not respond.

Front View of the VCR

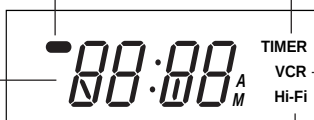


Multi Function Display

Power Indicator
Lights when power is on.

Timer Indicator

Lights when the VCR is set for a Timer Recording, or when One Touch Recording (OTR) is used. Flashes when Timer Recording is set, but a tape has not been inserted into the VCR and when a power interruption occurs during Timer Programming.



VCR Indicator
Lights when the VCR/TV selector is set to VCR.

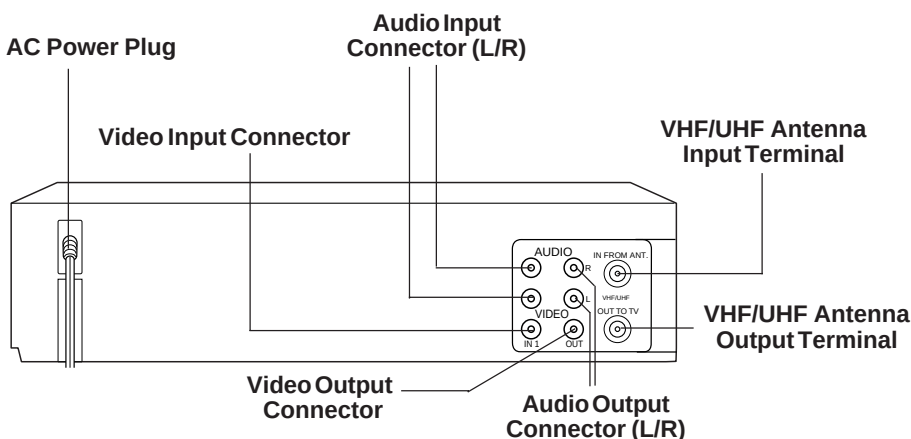
Clock/ Status/ Channel/ Speed Display

Displays the current time. Briefly displays VCR status when a function button is pressed. Briefly displays the channel number, or "L1" or "L2" when a channel or line input is selected. Briefly displays the recording speed when SPEED is pressed.

Hi-Fi Indicator

Lights when Hi-Fi audio is monitored in Playback Mode.

Rear View of the VCR



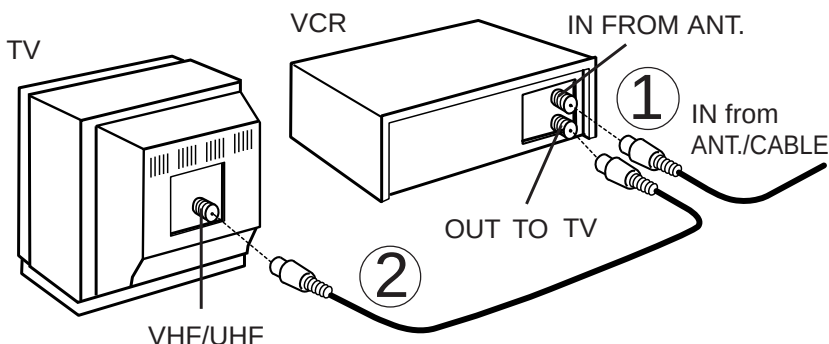
Note

While plugged into an AC outlet, the VCR consumes 3.0 W of electrical in off mode.

Initial Setup for ANT./ Cable -VCR -TV Connection

How to Connect

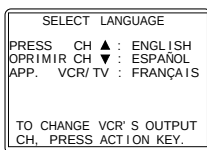
- 1 Connect the Cable from Antenna/Cable to the IN FROM ANT. terminal on VCR.
- 2 Connect the OUT TO TV terminal on the rear of VCR to the ANT. IN terminal on TV using the RF Cable (included accessory).



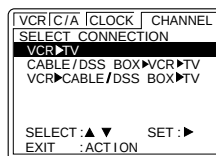
How to do Initial Setup

1 Press VCR button* for VCR mode. Turn the TV on and set it to channel 3.

2 Turn VCR on.
When VCR is turned on for the first time, **SELECT LANGUAGE** screen appears.

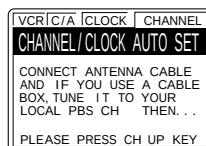


3 Press CH▲ to select English.
or
Press CH▼ to select Spanish.
or
Press VCR/TV key to select French.
When one of the above keys is pressed, **SELECT CONNECTION** screen is displayed in the selected language.



- If screen does not appear, check connection between VCR and TV and, if TV is tuned to channel 3, try switching it to channel 4.
- When you want to change the output channel of VCR, please refer to VCR's Output Channel on page 13.
- If wrong language is set, do "Reset All VCR Memory Functions" steps on page 9.

4 Press ▲▼ to select connection "VCR►TV" and press ► to set. **CHANNEL/CLOCK AUTO SET** screen appears.

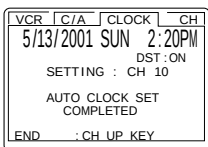


WARNING

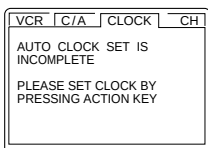
When using "Nut type" RF coaxial cables, tighten with fingers only. Overtightening may damage terminals.

***Important:** If a remote control button does not work when pressed, press the VCR button on the remote and try the button again.

- 5 Press CH▲ Key to start Channel/Clock Auto Set operation. Settings are performed automatically. If the setup is completed, the following screen is displayed.



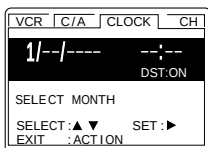
If "Auto Clock Set is Incomplete" screen appears, set the clock using MANUAL CLOCK SET procedure shown below.



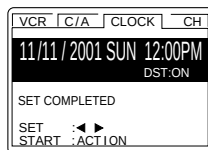
Manual Clock Set

If Auto Clock Set was incomplete, manually set the clock as follows.

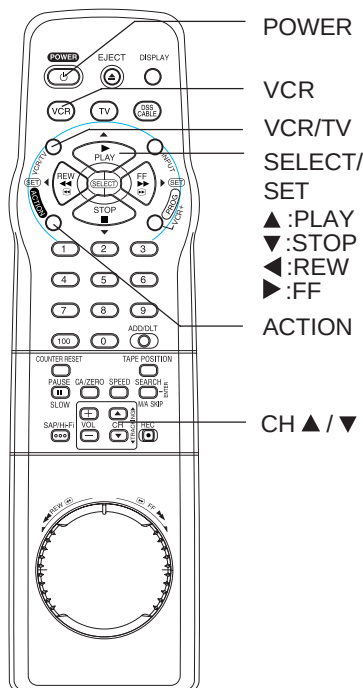
- 1 Press ACTION Key on the Remote to display CLOCK Menu screen.



- 2 Press ▲▼ to select the month and ► to set. In the same manner, select and set the date, year, time, and DST (daylight saving time).



- 3 Press ACTION Key twice to start CLOCK and exit.

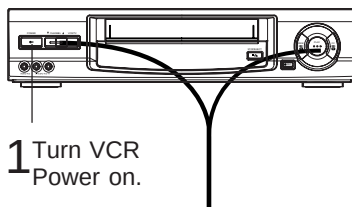


**Initial Setup
(Connection)**

Reset All VCR Memory Functions

Use when moving VCR to new location, or if a mistake was made in the Initial Setup section.

- Make sure a tape is not inserted in the VCR.



- 1 Turn VCR Power on.

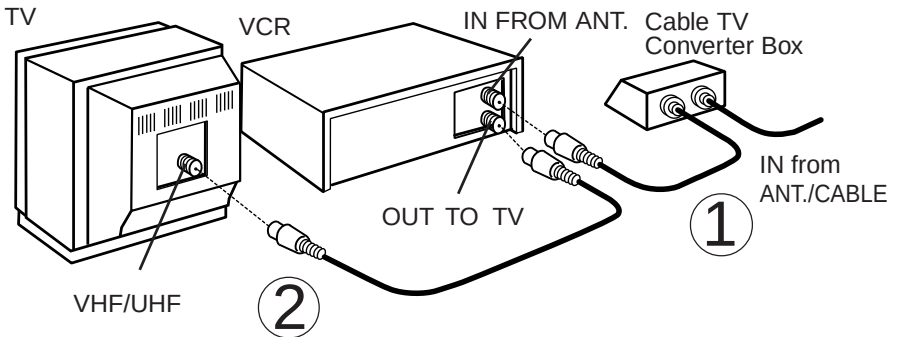
- 2 Press and hold both **PLAY** and **CHANNEL ▲** on the VCR for more than 5 seconds.
 - The power shuts off.

- 3 Do "Initial Setup" on page 8.

Initial Setup for DSS/Cable Box-VCR-TV Connection

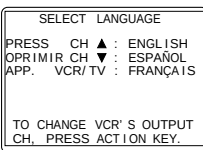
How to Connect

- 1 Connect the OUT Jack on your cable box to the IN FROM ANT. terminal on the VCR with the RF Cable.
- 2 Connect the OUT TO TV terminal on the rear of VCR to the ANT. IN terminal on TV using the RF Cable (included accessory).

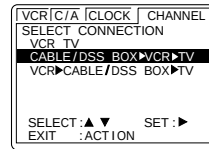


How to do Initial Setup

- 1 Press VCR button* for VCR mode. Turn the TV on and set it to channel 3.
- 2 Turn VCR on. When VCR is turned on for the first time, SELECT LANGUAGE screen appears.

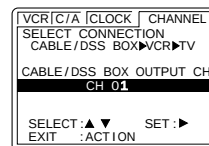


- 3 Press CH▲ to select English.
or Press CH▼ to select Spanish.
or Press VCR/TV key to select French.
When one of the above keys is pressed, SELECT CONNECTION screen is displayed in the selected language.



- If screen does not appear, check connection between VCR and TV and, if TV is tuned to channel 3, try switching it to channel 4.
- When you want to change the output channel of VCR, please refer to VCR's Output Channel on page 13.
- If wrong language is set, do "Reset All VCR Memory Functions" steps on page 9.

- 4 Press ▲▼ to select "CABLE/DSS BOX VCR TV" connection and press ► to set.

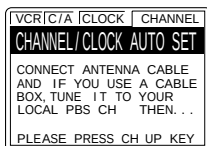


WARNING

When using "Nut type" RF coaxial cables, tighten with fingers only. Overtightening may damage terminals.

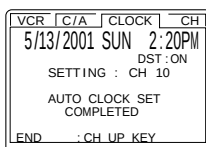
***Important:** If a remote control button does not work when pressed, press the VCR button on the remote and try the button again.

- 5 Confirm the output channel of your cable box or DSS receiver. Press ▲ ▼ Keys to select the same channel as the cable box or DSS receiver output channel. Press ► to enter.

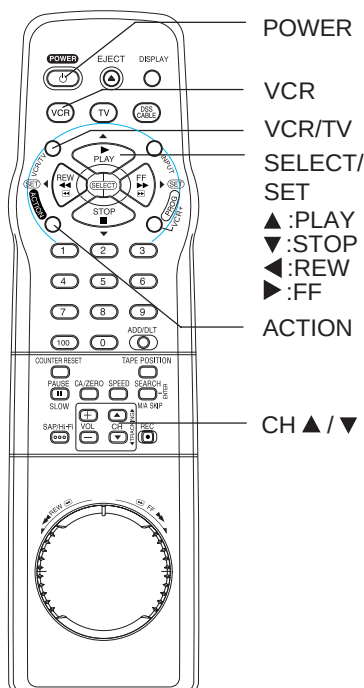
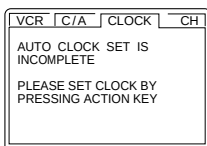


Turn on your cable box and set it to your Public Broadcasting Station (PBS) channel in your time zone. If you use a DSS receiver, it must be turned off.

- 6 Press CH ▲ Key to start Channel/Clock Auto Set operation. The Channel/Clock Setting is performed automatically. If the setup is completed, the following screen appears.



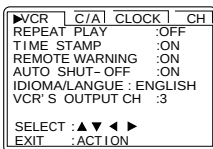
If "Auto Clock Set is Incomplete" screen appears, set the clock using MANUAL CLOCK SET procedures shown on page 9.



**Initial Setup
(Connection)**

Reset Language, Channels, Clock,

1

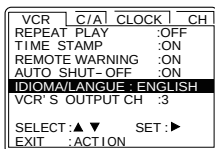


Press **ACTION***
to display menu.

2

Language

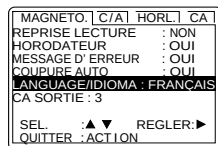
- 1) Press ▲▼ to select language item.



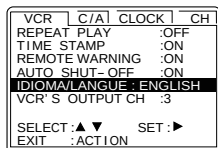
- 2) Press ▶ repeatedly.



For Spanish



For French

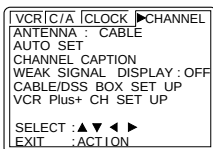


For English

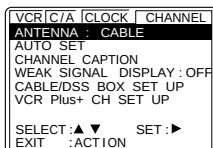
- 3) Press ACTION to exit.

Channels

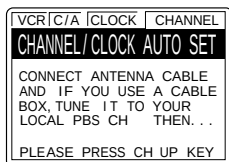
- 1) Press ◀▶ to select CHANNEL.



- 2) Press ▲▼ to select "ANTENNA," then press ▶ to set your antenna system (TV or CABLE).



- 3) Press ▲▼ to select "AUTO SET," then press ▶.
- If you use a cable box, set it to the PBS channel in your time zone.

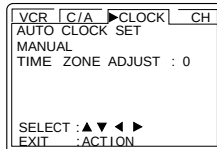


(This screen appears only when auto clock is set.)

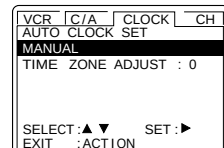
- 4) Press CH ▲.
- After Channel Auto Set is finished, Clock Auto Set will be performed.

Clock

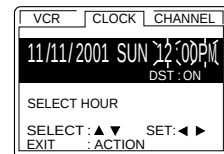
- 1) Press ◀▶ to select CLOCK.



- 2) Press ▲▼ to select MANUAL and press ▶. (For Auto Clock Set, select "AUTO CLOCK SET," then press CH ▲.)



("TIME ZONE ADJUST" appears only when auto clock is set.)



- 3) Press ▲▼ and ◀▶ to select and set the date, time, and DST (Daylight Saving Time).

- 4) Press ACTION twice to start the clock and exit this mode.

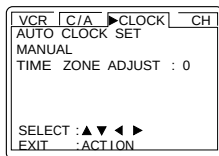
VCR's Output Channel

***Important:** If a remote control button does not work when pressed, press the VCR button on the remote and try the button again.

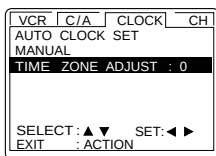
Time Zone Adjust ■ VCR's Output Channel

(Only when Auto Clock is set.)

- 1) Press ◀▶ to select CLOCK.



- 2) Press ▲▼ to select TIME ZONE ADJUST



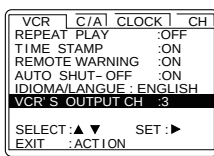
and press ◀ or ▶ to subtract or add hour(s) as necessary.

- 3) Press ACTION.

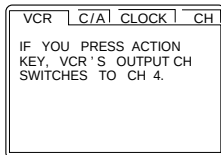
- 4) Press POWER off to perform AUTO CLOCK SET.

- TIME ZONE ADJUST returns to "0" if clock is set manually.

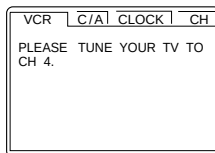
- 1) Press ▲▼ to select VCR'S OUTPUT CH.



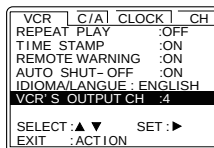
- 2) Press ▶.



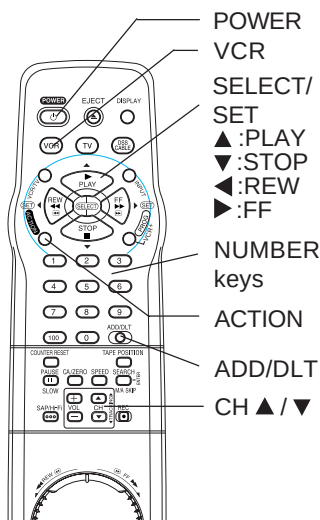
- 3) Press ACTION.



After 3 seconds



- To Make Corrections, repeat step 1) ~ 3).



Basic
 Operation

Add or Delete a Channel

To add channel:

Select channel with number keys and press ADD/HLT.

CHANNEL 08 ADDED

To delete channel:

Select channel with CH ▲/▼ or number keys and press ADD/HLT.

CHANNEL 08 DELETED

DST (Daylight Saving Time)

VCR automatically adjusts clock for DST. (Page 9.)

Spring (First Sunday in April)

DST:ON --> Sets clock ahead one hour.

Autumn (Last Sunday in October)

DST:ON --> Turns clock back one hour.

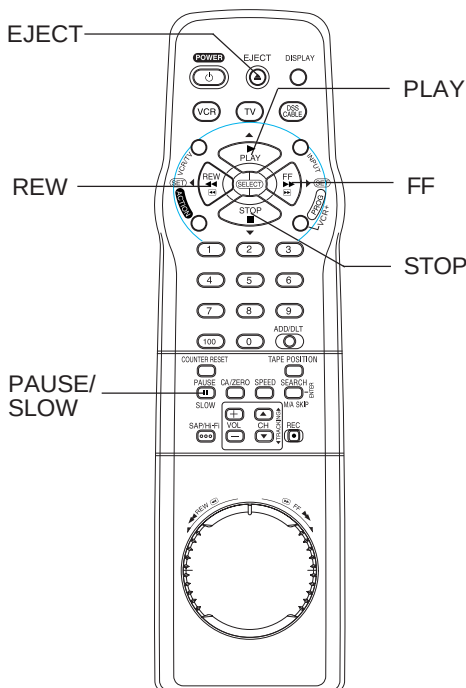
- If your area does not observe Daylight Saving Time, select DST:OFF.
- Keep these time changes in mind when programming the VCR for timer recordings.

Playback a Tape



Ready Check List

- ☐ All connections are made (pg. 8, 10, 22).
- ☐ TV and VCR are plugged in.
- ☐ TV is on and tuned to CH3, 4, or VIDEO.
- ☐ Remote is in VCR mode. (Press VCR)



1

Insert a tape,

- VCR power comes on.
- “VCR” lights on Multi Function Display.

2

Press **PLAY***
to play tape.

- If tape has no rec. tab (pg. 4), auto play begins.

Special Features During Play



Forward/ Reverse scene search

- > Press FF or REW.
- > Press again or PLAY to release.



Still (Freeze) picture

- > Press PAUSE/SLOW.
- > Press PLAY to release.



Frame by Frame picture

- > Press PAUSE/SLOW in Still mode.
- > Press PLAY to release.



Slow Motion picture

- > Hold down PAUSE/SLOW in Still mode.
- > Press PLAY to release.

Notes

- These features work best in SP or SLP mode.
- The sound will be muted.
- To reduce picture noise, see “Manual Tracking Control” on page 35.
- After the VCR is in Still or Slow mode for 3 minutes, it will switch to Stop mode automatically to protect the tape and the video head.

3

Press **STOP**
to stop tape.

Rapid Rewind/FF



Press REW or FF in Stop mode
to Rewind/ Fast Forward tape.

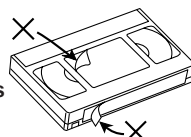
- Rewind your tape in approximately one minute when using a T-120 tape.



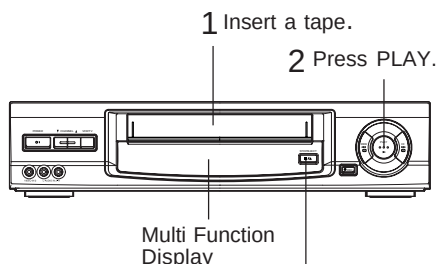
Press EJECT on remote,
or STOP/EJECT on VCR to eject tape.

Note

Remove loose or peeling labels from tapes
to prevent tape jam.



Playback using VCR controls

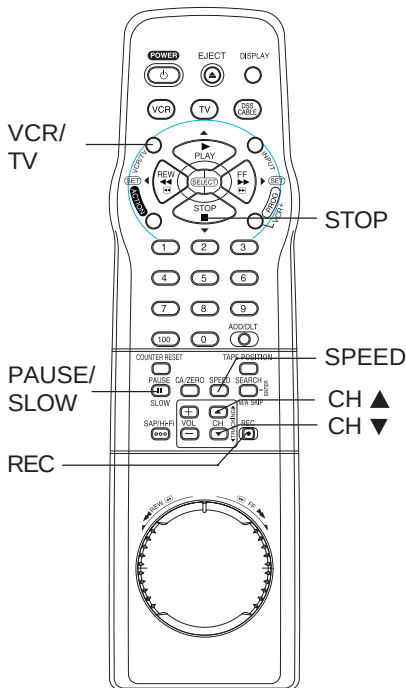


- 1** Insert a tape.
- 2** Press **PLAY**.
- Press **STOP/EJECT** to stop and/ or eject tape.

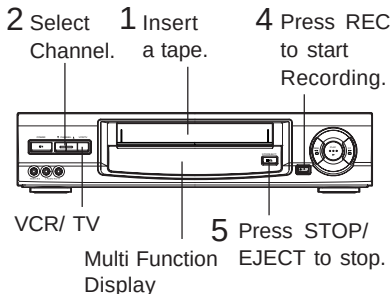
Record on a Tape

***Important:**

If a remote control button does not work when pressed, press the VCR button on the remote and try the button again.



Record using VCR controls



This video recorder, equipped with HQ (High Quality) system, is compatible with existing VHS equipment. Only use tapes with the **VHS** mark. Only tapes tested and inspected for use in 2, 4, 6, and 8 hour machines are recommended.



Ready Check List

- ☐ All connections are made (pg. 8, 10, 22).
- ☐ TV and VCR are plugged in.
- ☐ TV is on and tuned to CH3, 4, or VIDEO.
- ☐ Remote is in VCR mode. (Press VCR)

1 Insert a tape with rec. tab (pg. 4).

- VCR power comes on.
- "VCR" lights on Multi Function Display.

2 Press CH ▲▼, or number keys to select channel.

- For "LINE" input, see pg. 34.
- For channels over 100, press 100 key then press the remaining 2 digits.

3 Press SPEED to select record speed (pg. 4).

SP = Standard Play **LP** = Long Play
SLP = Super Long Play

- Speed appears on-screen and on Multi Function Display.

4 Press REC to start record.

- To edit out unwanted scenes, press PAUSE/SLOW to pause, and again to resume recording.

5 Press STOP to stop recording.

■ One Touch Recording (recording in progress),

- VCR shuts off after preset record length.
- > each press of REC adds 30 min. to record length up to 4 hours.

■ Record one station, watch another,

- > press VCR/TV ("VCR" goes out on Multi Function Display),
- > select channels at TV (recording continues).

Note

- **Watching one channel and recording another is NOT possible when using a Cable Box or a Satellite Receiver.**

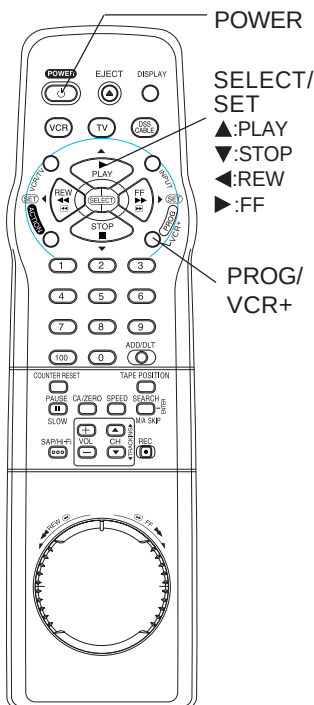
■ Select channels at VCR,

- Other channels cannot be viewed during recording.
- > press VCR/TV ("VCR" lights on Multi Function Display),
- > select channels at VCR.

Note

- After 5 min. in Pause mode, VCR stops to protect tape and video head.

Timer Recording

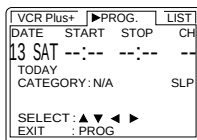


Ready Check List

- ☐ All connections are made (pg. 8, 10, 22).
- ☐ TV and VCR plugged in and turned on.
- ☐ VCR/TV selector set to "VCR."
- ☐ Clock set correctly.
- ☐ Tape has rec. tab (pg. 4).
- ☐ Remote is in VCR mode. (Press VCR)

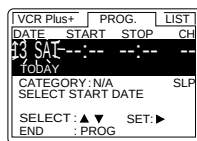
1 Press **PROG/VCR+** button* to display PROGRAM.

2



Press ▼ to display Program screen.

3



1) To set record DATE, press ▲▼ to select: 1~31= one time, or DAILY= MON~ FRI, or WEEKLY= same time each week and press ▶ to set.
• See selection order below left.

Example

Today — 8—9.....31— 1 — 2 6
SELECT▲/▼ Selection Order DAILY
WEEKLY (SAT) WEEKLY (MON) WEEKLY (SUN)

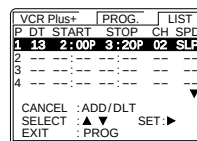
2) To set remaining items, press ▲▼ to select and press ▶ to set START/ STOP times, CH(channel) or LINE input (pg.34), and tape speed (SP, LP, SLP).

Press **PROG/VCR+** button to end programming.

Notes

- If you are using a Cable Box, VCR Timer Programming Channel(Step 3) must be set to the Cable Box output channel AND your Cable Box must be manually set to the desired channel. The Cable Box power left on.
- If a power interruption occurs while programming the timer, the timer program(s) may be cancelled. If "TIMER PROGRAMS WERE LOST DUE TO POWER INTERRUPTION" appears on-screen, please reenter the timer programs.

4



To Enter More Programs, press ▲▼ to select and press ▶ to set an unused program number and repeat step 3.

Or

Press **PROG/VCR+** button again to exit.

5

Press **POWER** off to set the timer.
("TIMER" lights on Multi Function Display.)

***Important:** If a remote control button does not work when pressed, press the VCR button on the remote and try the button again.

Review, Replace or Clear Program Contents:

(Recording is not in progress)

1

VCR Plus+	PROG.	LIST
P DT	START	STOP CH SPD
1	7	9:00A 12:00A 08 SP
2	8	10:00P 12:00P 02 SP
3	10	8:00P 9:00P 10 SP
4	SU	9:00P 10:00P L1 LP

SELECT: ▲▼ SET: ►
EXIT: PROG

- 1) Press **PROG/VCR+** button.
- 2) Press **◀▶** to select LIST.

To cancel a Timer Recording in progress...

Press **POWER** and then **STOP** within 10 seconds to cancel the Timer Recording. (The **TIMER** indicator goes out on Multi Function Display.)

2

VCR Plus+	PROG.	LIST
P DT	START	STOP CH SPD
1	7	9:00A 12:00A 08 SP
2	8	10:00P 12:00P 02 SP
3	10	8:00P 9:00P 10 SP
4	SU	9:00P 10:00P L1 LP

CANCEL: ADD/DLT
SELECT: ▲▼ SET: ►
EXIT: PROG

- Press **▲▼** to select number.

3

To Replace program...

VCR Plus+	PROG.	LIST
DATE	START	STOP CH
7 SUN	9:00A	12:00A 08
TODAY		
SP		

SELECT START DATE
SELECT: ▲▼ SET: ►
END: : PROG

- 1) Press **▶** to display.
- 2) Repeat Step 3 (pg.16) to set new programs.

or

To Clear program...

VCR Plus+	PROG.	LIST
P DT	START	STOP CH SPD
1	7	9:00A 12:00A 08 SP
2	8	10:00P 12:00P 02 SP
3	10	8:00P 9:00P 10 SP
4	SU	9:00P 10:00P L1 LP

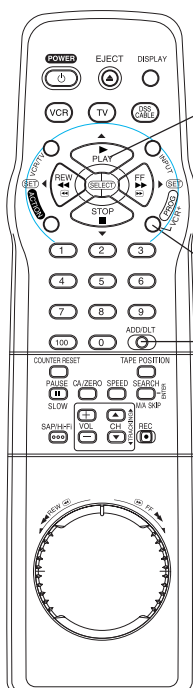
CANCEL: ADD/DLT
SELECT: ▲▼ SET: ►
EXIT: PROG

Press **ADD/DLT**.

4

Press **PROG/VCR+** button to end the program.

- If there are set programs, press **POWER** off to set timer.



SELECT/SET

▲:PLAY
▼:STOP
◀:REW
▶:FF

PROG/VCR+

ADD/DLT

Timer
Recording

Important notes when using a DSS receiver

- When recording programs via a DSS receiver, the DSS receiver must be left on.
- When recording programs via an antenna or cable, the DSS receiver must be turned off.

Timer Recording Using VCR Plus+® System

VCR Plus+ System is ...

a feature that allows you to set **most items** of a timer recording by simply entering a special code number (PlusCode programming number) found in TV GUIDE and selected newspaper TV listings.

Initial Setup.....

In order to use Timer Programming Using VCR Plus+ System, the Initial Setup on page 8 to 11 must be completed for setting Clock and Channel.

Channel Setup.....

Since PlusCode numbers assigned to channels (found in TV Guide and selected newspapers) may differ from channels in your viewing area, you'll need to enter your local TV channel number for each corresponding Guide Channel.

If you perform the VCR+ Channel set up procedures shown below, you will be able to perform timer recordings using the PlusCode programming number listed in your local TV listing.

VCR Plus+ System Channel Setup

For [VCR-TV] or [VCR-cable box-TV] connection only.

To complete step 4 of setup, do the following:

- Prepare a TV/Cable station line-up and channels they are received on. Also, the Guide channel numbers assigned to your stations (found in TV Guide and selected newspapers.)

- Make a 3-column chart (see sample).

Left column

--> all stations you receive.

Middle column

--> each station's assigned Guide channel number from TV Guide, etc.

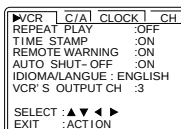
Right column

--> channel number on which your TV receives the station.

SAMPLE ONLY

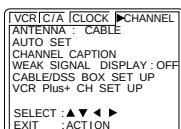
Broadcast or Cable station name	Assigned Guide channel No.	Channel No. on which my TV receives the station.
HBO	33	15
Nickelodeon	38	20
CBS	04	04
FOX	11	

1



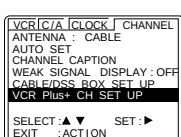
Press **ACTION*** to display menu.

2



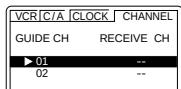
Press **◀▶** to select CHANNEL.

3



Press **▲▼** to select VCR Plus+ CHANNEL SETUP, and press **►** to set.

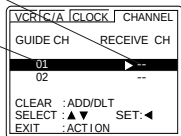
4



To enter VCR Plus+ channels,

press **►** to move cursor to right, press **▲▼** to enter number, press **◀** to set, and press **▲▼** to scroll up/down.

- Repeat step 4 until list is complete.



To Make Corrections, press **▲▼** and **►** to move to error, then **▲▼** to change, or **ADD/DEL** to erase number.

5

Press **ACTION** twice to end setup.

***Important:** If a remote control button does not work when pressed, press the VCR button on the remote and try the button again.

VCR Plus+ System Programming

✓ Ready Check List

- ☐ Clock is set.
- ☐ VCR Plus+ Setup is complete (see page 18).

1

VCR Plus+	PROG.	LIST
DATE	START	STOP
13 SAT	--:--	--:--
TODAY		
CATEGORY: N/A		
SLP		
SELECT: ▲▼▶◀		
EXIT: :PROG		

Press **PROG/VCR+** button to display PROGRAM.

2

VCR Plus+	PROG.	LIST
ENTER PLUSCODE NUMBER		
-		
USING 0-9 KEYS		
SELECT: ▲▼▶◀		
EXIT: :PROG		

Press **◀▶** to select display VCR Plus+ screen.

3

VCR Plus+	PROG.	LIST
ENTER PLUSCODE NUMBER		
1		
USING 0-9 KEYS		
BACKSPACE: ◀		
END: :PROG		

Press number keys to enter PlusCode number and press **PROG/VCR+** button to set.

To Make Corrections, press **◀** repeatedly to delete number, then repeat step 3.

- If the PlusCode number entered begins with "0," skip to step 5. Display in step 4 will not appear.

4

VCR Plus+	PROG.	LIST
ONCE		
DAILY (MON-FRI)		
WEEKLY		
SELECT: ▲▼		
END: :PROG		

Press **▲▼** to select ONCE, DAILY (MON-FRI), or WEEKLY record frequency and press **PROG/VCR+** button to set.

5

VCR Plus+	PROG.	LIST
DATE	START	STOP
13 SAT	2:20P	3:20P
TODAY		
CATEGORY: N/A		
SELECT CATEGORY		
SELECT: ▲▼ SET: ▶◀		
END: :PROG		

Press **▲▼** to change category and record speed.

Press **▶** to set.

Press **PROG/VCR+** button to end program.

6

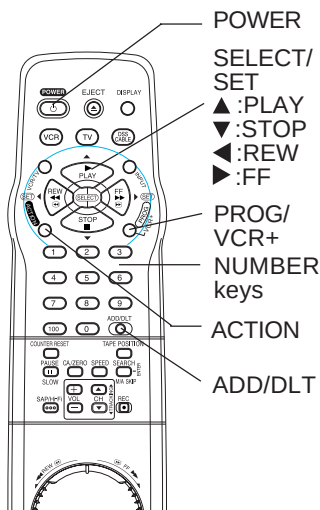
VCR Plus+	PROG.	LIST
P DT	START	STOP
1 13	2:00P	3:20P
2	--:--	--:--
3	--:--	--:--
4	--:--	--:--
CANCEL: ADD/HLT		
SELECT: ▲▼ SET: ▶		
EXIT: :PROG		

Press **PROG/VCR+** button again to exit.

- Press **ADD/HLT** to delete the program.

7

Press **POWER** off to set the timer. ("TIMER" lights on Multi Function Display.)



Do normal Timer Record if...

- PlusCode number is not listed for program.
- program (e.g. sports event) may run over set stop time.

See page 17 to:

- cancel a timer recording in progress.
- review, replace, or clear program contents.

Important for DSS/Cable Box Users

- When recording via DSS, the receiver must be left on. When recording via cable or antenna, DSS receiver must be off.
- When recording via a cable box, leave box on and tuned to channel to be recorded.

Notes

- Do not overlap program times.
- PlusCode numbers cannot be used to program VCR to record DSS and cable box channels.
- Make each entry within 1 minutes or the VCR will exit setup mode.
- Once VCR Plus+ channel setup is done, channels stay in memory. If a power interruption occurs, VCR Plus+ channel setup may be lost. Please do VCR Plus+ channel setup again.

Timer
Recording

Multi-Brand Control Feature

Multi-Brand Control Setup

The Remote Control can be set to control some TV and Cable box/DSS functions.

1 Find your TV and Cable Box/DSS Receiver Brand Code Number on the following page.

- 2**
- **Setup for TV control,**
-->hold down TV button,
-->enter code with number keys.
 - **Setup for Cable or DSS control,**
-->hold down DSS/CABLE button,
-->enter code with number keys.
 - If code number is 100 or greater,
-->press 100 key, then other digits.
E.g., press 100 - 0 - 2 for 102.

3 Confirm code entry,
-->press POWER to turn selected unit on or off.
• See table below for controllable functions in each mode.

- Notes**
- Repeat setup after remote battery replacement.
 - Remote will not control every TV, cable box, or DSS made by the manufacturer listed. If you get no response, your particular unit cannot be controlled. There are NO additional codes for the products listed. If your product is not listed, then the remote is not compatible with that product.

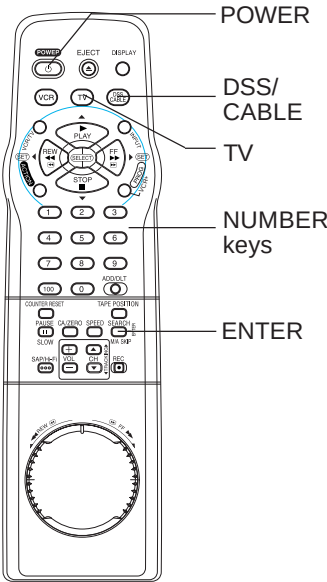
Using Multi-Brand Control

After remote is set up, you can select VCR, TV, or DSS/CABLE for the desired function.

Press VCR, or TV, or DSS/CABLE on the remote.
(Table below shows available unit buttons for each mode.)

Unit Mode	VCR	TV	CABLE/ DSS
VCR	All	VOL UP/DOWN	_____
TV	VCR/TV, PLAY, STOP EJECT, SAP/ Hi-Fi, DISPLAY, FF, REW, PAUSE/ SLOW, REC, SPEED, CA/ZERO, COUNTER RESET, TAPE POSITION	POWER, INPUT, number keys, ENTER, CH UP/ DOWN, VOL UP/DOWN	_____
CABLE/ DSS		VOL UP/ DOWN	POWER, ENTER, number keys (except 100key), CH UP/ DOWN

- Notes**
- Not all functions listed may be controllable.
 - In TV or DSS/CABLE mode, it may be necessary to press ENTER after pressing number keys for channel selection.



TV Brand Code Numbers

Panasonic	01, 02	Sylvania	05	JVC	11
Quasar	01, 02	Sharp	06, 07	Hitachi	12
RCA	03	Sony	08	Mitsubishi	07, 13
GE	03	Toshiba	09	Samsung	14
Zenith	04	Sanyo	10	Gold Star	15, 16, 17
Magnavox	05	Fisher	10		

Cable Box Brand Code Numbers

Archer	05, 06, 01, 44, 63, 91, 126	Quest	05, 06
Cabletenna	01, 44, 63, 91, 126	Radio Shack	51, 44, 59, 75, 126
Cableview	63, 44, 42, 30, 52, 04, 124, 126	RCA	16, 17, 97, 109
Century	51, 44, 59, 75, 126	Realistic	51, 44, 59, 75, 126
Citizen	63, 44, 42, 30, 52, 04, 124, 126	Recoton	51, 44, 59, 75, 126
Curtis	08, 09, 61, 53, 87	Regal	14, 15, 28, 41, 102, 103, 104, 108, 130
Diamond	01, 44, 63, 91, 126	Regency	28, 130
Drake	67	Rembrandt	01, 32, 39, 42, 44, 63, 126
Eagle	13, 22, 58, 62, 20, 40, 26, 107	Salora	68
Eastern	28, 130	Samsung	05, 32, 40, 42, 06
GC Brand	63, 44, 42, 30, 52, 04, 124, 126	Scientific Atlanta	08, 09, 61, 53, 87
Gemini	04, 124	Sheritech	27
General Electric	57, 01	Signal	26, 112
General Instruments	01, 02, 03, 04, 34, 55, 83, 106, 65, 67, 68, 115, 117, 118, 124, 91	SL Marx	32, 40, 42, 06, 43, 44, 52, 63, 126
Hamlin	14, 15, 28, 41, 102, 103, 104, 108, 130	Sprucer	16, 17, 97, 109
Hitachi	31	Standard Components	32, 39, 42, 44, 126
Jasco	04, 124	Stargate	32, 40, 63, 44, 42, 30, 52, 04, 06, 124, 126
Jerrold	01, 02, 03, 04, 34, 55, 83, 106, 65, 67, 68, 115, 117, 118, 124, 91	Sylvania	19
Macom	31	Teknika	74
Magnavox	26, 112	Telecaption	77, 127
Matsushita	16, 17, 97, 109	Televue	32, 40, 42, 06
Movietime	32, 39, 42, 44, 126, 38, 40	Texscan	18, 19
NEC	38, 40, 32	Tocom	33, 34, 01, 42, 66, 91
NOVAVISION	08, 09, 61, 53, 87	Toshiba	36
NSC	38, 40, 32	Uniden Satellite	65
Oak	46, 11, 129	Unika	01, 44, 63, 91, 126
Oak Sigma	46, 11, 129	Universal	42, 43, 44, 52, 63, 126
Panasonic	16, 17, 97, 109	Videoway	07, 23, 50, 129
Philips	07, 13, 20, 23, 24, 50, 128, 129	Vid Tech	64
Pioneer	05, 06	Vidtek	64
Pulsar	63, 44, 42, 30, 52, 04, 124, 126	Viewstar	13, 22, 58, 62, 20, 40, 26, 107
		Zenith	07, 23, 50, 129

DSS Brand Code Numbers

Toshiba	92	Panasonic	96
Hitachi/ Hughes	93	RCA	97
Magnavox/ Uniden 1	94	Sony	98, 105
Magnavox/ Uniden 2	95		

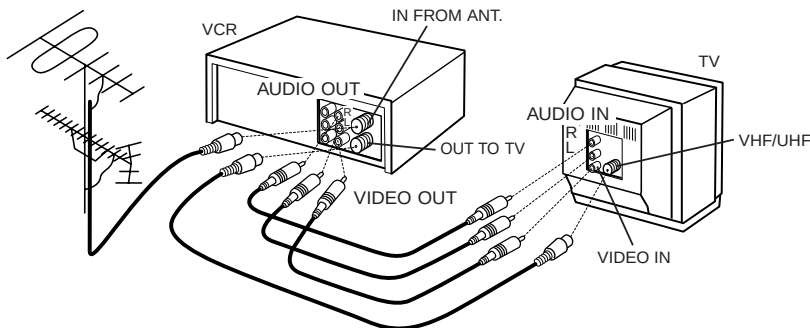
Important Notes

- Due to changes in infra-red commands used by manufacturers, some brands have several codes. If your unit does not respond to the first code, please try the next one.
- Some TV, Cable Box and DSS Box brands require you to turn on the power manually.

Advanced Connections

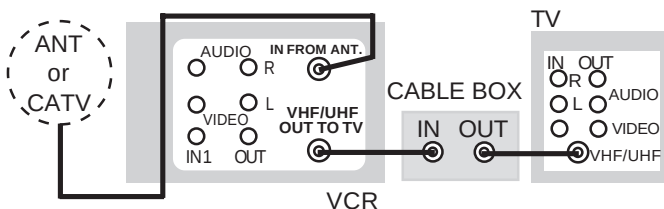
Audio/Video connection

If your TV has AUDIO IN and VIDEO IN terminals, you can connect your VCR to them to receive higher quality picture and sound.



- 1 Connect the VIDEO OUT terminal on the VCR to the VIDEO IN terminal of your TV.
- 2 Connect the "L" and "R" AUDIO OUT terminals on the VCR to the "L" and "R" AUDIO IN terminals of your TV.
- 3 Set the VIDEO/TV selector of your TV (Monitor/Receiver) to "VIDEO."

■ With a Cable Box (VCR → Cable Box)



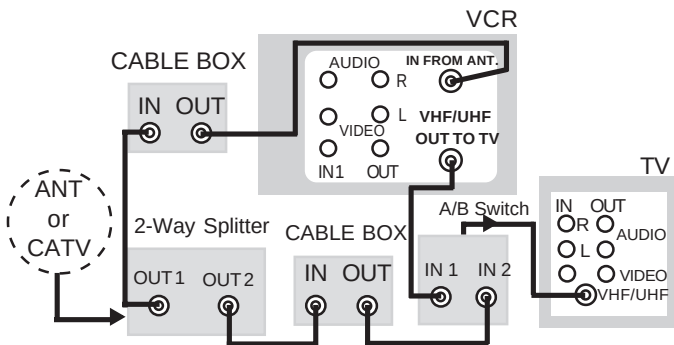
You Can

- view any (including scrambled) channel.
- use VCR Remote Control to select channels without using Multi-brand control feature.

You Cannot

- record scrambled channels.

■ Connect With Two Cable Boxes



You Can

- record and view both scrambled and unscrambled channels if additional equipment is added. This connection requires: two converter boxes, an A/B switch, and a 2-way splitter.

You Cannot

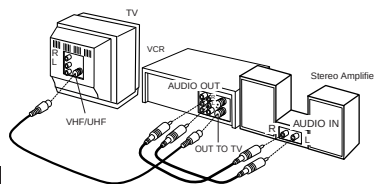
- view channel other than the one selected for any type of recording.
- do a Timer recording of a channel unless you select it at the cable box.

MTS Broadcast/ VHS Hi-Fi Stereo System

Connection

Make the Audio/Video Connection as shown on the previous page.

- You can use a TV connected to a Stereo amplifier and speakers instead of a Stereo TV.



Receivable Broadcast Types

The following are possible audio broadcast types and on-screen displays.

The signal being received is indicated with an "Ⓢ" mark while the selected audio mode is indicated with an arrow.

To display the broadcast signal being received, --> **press DISPLAY**.

MTS Stereo and SAP broadcast

Multi-channel Television Sound Stereo (main language) and Secondary Audio Program (sub language) broadcasts are being received simultaneously. Select STEREO or SAP audio mode.

MTS Stereo broadcast

Multi-channel Television Sound Stereo broadcast. Select STEREO audio mode.

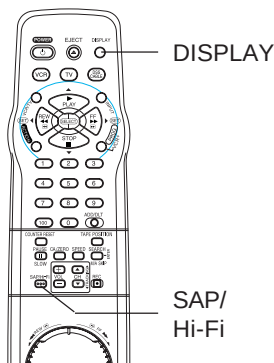
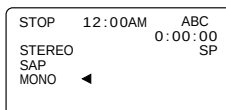
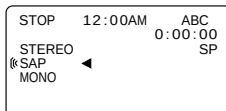
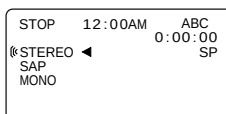
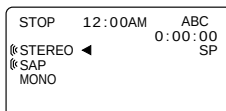
- If stereo broadcast is weak and display flickers, select MONO audio mode for possible better results.

SAP broadcast

Secondary Audio Program (sub language) broadcast. Select SAP audio mode for the sub language.

MONO broadcast

Normal monaural sound broadcast.

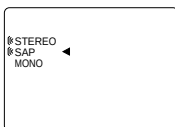


Equipped with **dbx**® -TV Noise Reduction for true MTS reproduction. **dbx**® -TV Noise Reduction is required for good stereo separation and audio fidelity. **dbx**® is a registered trademark, and is licensed by **dbx**® Technology Licensing.

Audio Mode for Recording

- Press SAP/ Hi-Fi** to display audio mode. (Display disappears after 5 seconds.)

- Press SAP/ Hi-Fi repeatedly** to select desired mode.



- Arrow indicates selection.

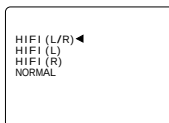
- Refer to "Receivable Broadcast Types" above.

- Do a recording.** See page 15.

Audio Mode for Playback

- Start playback.** See page 14.
- Press SAP/ Hi-Fi** to display audio mode. (Display disappears after 5 seconds.)

- Press SAP/ Hi-Fi repeatedly** to select desired mode.



- Arrow indicates selection.

- Select "HIFI(L/R)" or "HIFI(L)" or "HIFI(R)" to listen to stereo recordings in stereo sound. Select "NORMAL" for monaural sound.

Notes

- Only tapes recorded in Hi-Fi stereo will playback with true stereo sound. Standard stereo tapes will playback in monaural sound.
- To listen to Hi-Fi stereo playback, the VCR AUDIO (L/R) jacks must be connected to a stereo TV or an external stereo amplifier and speakers. (See top of this page.)
- If tracking is adjusted during playback, Hi-Fi audio may revert to normal audio.
- Hi-Fi and normal audio playback volume level may differ.

Tape Operation

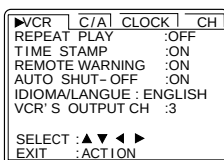
COMMERCIAL▶▶**ADVANCE**®

COMMERCIAL▶▶**ADVANCE**® detects and marks the beginning and end points of commercials on your tape for recordings over 15 minutes in length. When COMMERCIAL▶▶**ADVANCE**® marked tape is played back, the VCR automatically advances through the commercial segments at high speed. You can also set this feature to Manual so as to have more control over the advance process. The effectiveness of this system can vary due to differences in the way television stations broadcast. See page 26 for answers to the most commonly asked questions about this feature.

COMMERCIAL▶▶**ADVANCE**® Marking

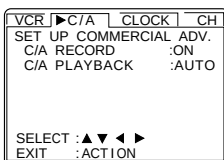
When C/A RECORD: ON, VCR automatically rewinds the tape after a recording has been made and marks the beginning and end of any detected commercial blocks. After marking is done, the tape is returned to the end of recording. Commercials are not erased from the tape.

1



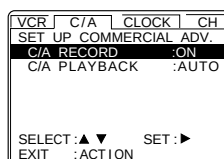
Press **ACTION***
to display MENU.

2



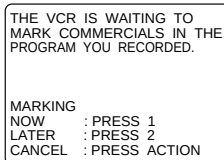
Press **◀▶**
to select C/A
and display SET UP
COMMERCIAL ADV.

3



Press **▲▼**
to select C/A RECORD
and press **▶** to set.

ON Timer, VCR Plus+ System, and One Touch recordings are marked automatically.

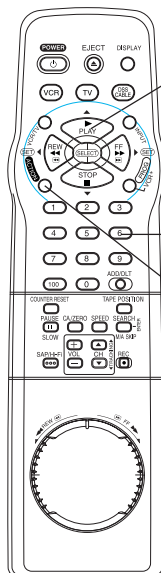


OFF The VCR will not mark commercials.

When you are editing or dubbing a tape, or when you do not wish to use this feature, OFF should be selected.

Ready Check List

- ☐ All connections are made.
- ☐ One time Setup completed.
- ☐ VCR is plugged in.
- ☐ TV is turned on and set to CH3, 4 or Video on TV.



SELECT/
SET

▲:PLAY
▼:STOP
▶:FF
◀:REW

NUMBER
keys

ACTION

Note

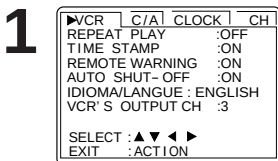
- When using the timer to record two adjacent shows on the same channel, better accuracy can be obtained by programming each shows separately.

4 Press **ACTION** again
to return to normal screen.

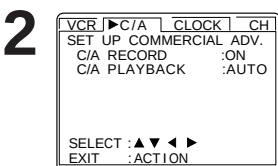
***Important:** If a remote control button does not work when pressed, press the VCR button on the remote and try the button again.

COMMERCIAL▶▶**ADVANCE**® Playback

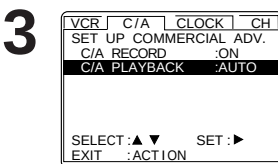
When playing back recording which have been marked using **COMMERCIAL▶▶ADVANCE**® feature, you can either set VCR to automatically advance through marked commercial blocks, or set it so that commercials are only skipped on your command.



Press **ACTION**
to display MENU.



Press ◀▶
to select C/A
and display SET UP
COMMERCIAL ADV.

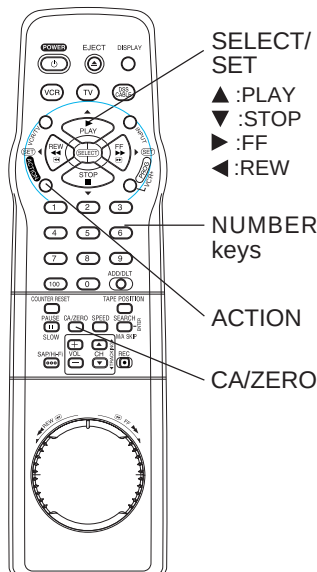


Press ▲▼
to select C/APLAYBACK
and press ▶ to set.

AUTO VCR will automatically advance through marked commercial blocks recorded on the tape and then resume playback.

MANUAL VCR will advance through commercials only when CA/ZERO is pressed. Playback will resume when the end mark of a commercial block is found, or a new recording or blank portion is detected, or after 8 minutes.

4 Press **ACTION** again
to return to normal screen.



COMMERCIAL▶▶ADVANCE® and **MOVIE▶▶ADVANCE**® are registered trademarks of SRT, Inc. A Jerry Iggulden invention licensed in association with Arthur D. Little Enterprises, Inc.
U.S.Pat. No. 5,333,091;
5,692,093; 5,696,866
other patents pending

Notes

- The selection mode in step 3 remains set unless there is a power outage in which case the original factory setting will be restored.
- If playback is started in the middle of a commercial, only a single commercial is shown, or an individual commercial is longer than 1 minute, a commercial may not be skipped. Press FF to quickly advance through the commercial.
- Part of a recorded program may be skipped over if the program portion between commercials is less than one minute or there are frequent dark and quiet scenes during the program. To view the portion of tape being incorrectly skipped, press PLAY while the VCR is skipping, reverse the tape to a point just prior to where the skipping began and press PLAY again. This time the group will not be automatically skipped. Automatic skipping will be re-enabled when the end of the marked group is detected.

**Advanced
Operation**

Tape Operation (continued)

The most commonly asked questions about **COMMERCIAL••ADVANCE®** are answered below.

Question	Answer
How fast does the VCR advance through commercials?	The VCR advances through a 3-minute commercial block in about 8 to 12 seconds if the tape speed is SLP. In SP, it takes about 25 to 35 seconds.
Are commercials advanced through only when I playback a recording?	Yes. The commercials are not marked until after the recording is finished.
Are commercials still recorded on the tape in case I choose to view them sometime?	Yes. By setting the C/A PLAYBACK to MANUAL, see page 25, you can view or advance through commercials as desired.
Does COMMERCIAL••ADVANCE® work in all recording speeds?	Yes. COMMERCIAL••ADVANCE® works in SP, LP, and SLP.
Does the VCR advance through commercials each time I playback tapes which were recorded using COMMERCIAL••ADVANCE® ?	Yes. As long as C/A PLAYBACK is set to AUTO, see page 25, the VCR should advance through commercials each time the tape is played back.
After marking commercials, does the VCR stop at the end of the tape, or rewind to the beginning?	The tape stops at the end of the recording so that any additional timer recordings can be performed.
Can I play my COMMERCIAL••ADVANCE® recordings in non- COMMERCIAL••ADVANCE® VCRs?	Yes. COMMERCIAL••ADVANCE® marked recordings will play in non- COMMERCIAL••ADVANCE® VCRs, but commercials will not be advanced through.
Does the marking process interfere with other programmed recordings?	No. If the interval between 2 or more timer programs is not sufficient to mark the recording, marking will be done after all recordings are complete and the power goes off.
What happens if I cancel the marking in progress so I can use the VCR?	Marking will be resumed when the VCR's power is turned off as long as the tape has not been ejected.
What if part of my program is advanced through along with the commercials?	Please see the 3rd note on page 25.
Additional Notes: • Because of the various ways in which commercials are broadcast, the VCR may not be able to recognize all commercials. • If a timer recording is scheduled for the middle of the night, please be aware that the VCR will make some noise as it rewinds and fast forwards the tape while marking commercials.	

COMMERCIAL••ADVANCE® and **MOVIE••ADVANCE®** are registered trademarks of SRT, Inc.
A Jerry Iggulden invention licensed in association with Arthur D. Little Enterprises, Inc.

U.S.Pat. No. 5,333,091;
5,692,093; 5,696,866
other patents pending

***Important:** If a remote control button does not work when pressed, press the VCR button on the remote and try the button again.

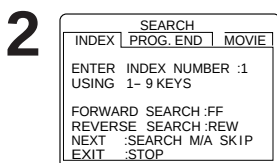
MOVIE ▶ ADVANCE®

MOVIE ▶ ADVANCE® helps you locate certain parts of prerecorded movies (rented or purchased). The feature works in two ways.

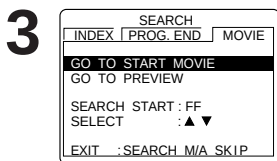
- You can go to the beginning of the movie.
- You can skip from one preview to the next.

MOVIE ▶ ADVANCE® works only on tapes recorded in SP speed with the record tab removed.

1 Insert a tape without record tab.



Press **SEARCH/ M/A SKIP*** to display SEARCH.



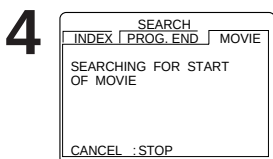
Press **SEARCH/ M/A SKIP** twice to select MOVIE and press **▲ ▼** to select GO TO START MOVIE or GO TO PREVIEW.

Select **"GO TO START MOVIE."** if you want to advance directly to beginning of the movie.

--> continue with step 4.

Select **"GO TO PREVIEW."** if you want to view the first (next) preview.

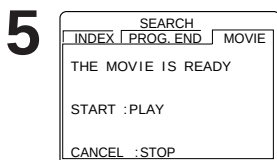
--> go to "To Search for Preview" at right.



Press **▶** to start searching.

- To cancel, press STOP.

When the movie is found...

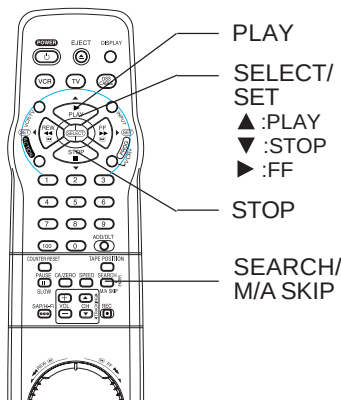


Press **PLAY** to start playback.

- To cancel, press STOP.

Ready Check List

- ☐ All connections are made.
- ☐ One time Setup completed.
- ☐ VCR is plugged in.
- ☐ TV is turned on and set to CH3, 4 or Video on TV.



To Search for Preview.

You can override the operation of MOVIE ▶ ADVANCE® SEARCH FOR PREVIEWS mode by pressing SEARCH/ M/A SKIP during tape searching.

MOVIE ▶ ADVANCE® works by searching the tape past each preview and then reversing back to the start of the detected preview. While the tape is reversing back, if SEARCH/ M/A SKIP is pressed, MOVIE ▶ ADVANCE® will begin searching for the next preview. While searching for the next preview, if you see the start of a preview which you wish to watch, press SEARCH/ M/A SKIP and MOVIE ▶ ADVANCE® will immediately reverse back to the start of that preview, instead of searching further past the preview start point. Once the VCR is playing a preview, press SEARCH/ M/A SKIP to advance to the next preview, long commercial or the start of the movie (whichever is next).

1 Start preview searching.

1) In step 3 at left, select Go To PREVIEW.

2) Press **▶**.

- If you want to playback, press PLAY.

When a preview is detected, VCR will start playback.

2 Start next preview searching.

Press SEARCH/ M/A SKIP.

- To cancel, press STOP.

Advanced
Operation

Tape Operation (continued)

Search System

For each recording, an invisible index mark is placed on the tape. A program index and information are also included for timer recordings. These marks are used to access or scan recordings.

Index Search

1

SEARCH	
INDEX	PROG. END
MOVIE	
ENTER INDEX NUMBER :1	
USING 1-9 KEYS	
FORWARD SEARCH :FF	
REVERSE SEARCH :REW	
NEXT :SEARCH M/A SKIP	
EXIT :STOP	

Press **SEARCH/**
M/A SKIP* to
display **SEARCH** in
Stop or Play mode.

2

INDEX SEARCH 3

Press number keys
to select recording
number.

- To calculate
number, see below.

Press **FF** or **REW**
to start search.

3

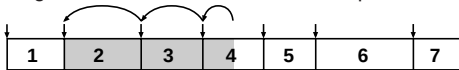
INDEX SEARCH
FORWARD SEARCH : FF
REVERSE SEARCH : REW

- Play begins at
search end. To
search forward or
back 1 index,
press FF or REW
while screen left
is displayed (10
sec.).

To Calculate Index Number

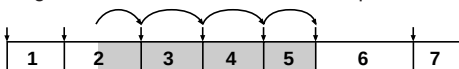
Example 1:

To go to rec. 2 from rec. 4, enter 3 and press **REW**.



Example 2:

To go to rec. 6 from rec. 2, enter 4 and press **FF**.



NOTE: ↓ indicates start points of each recording.

Note

- If Index Search is started very close to an index mark, that index mark may not be counted in the search.

Program End Search

Locates end point of recording for
continuity.

1

Press **SEARCH/** **M/A SKIP**
twice to display **SEARCH** in
Stop or Play mode.

2

SEARCH	
INDEX	PROG. END
MOVIE	
SEARCH START :FF	
NEXT :SEARCH M/A SKIP	
EXIT :STOP	

Press **FF**
to start
PROGRAM
END SEARCH.

Examples of Program End Search.

Fig. 1

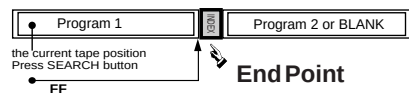


Fig. 2

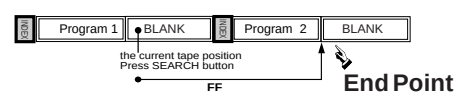
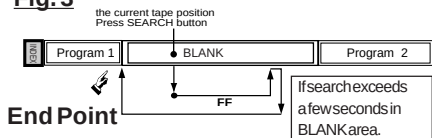


Fig. 3



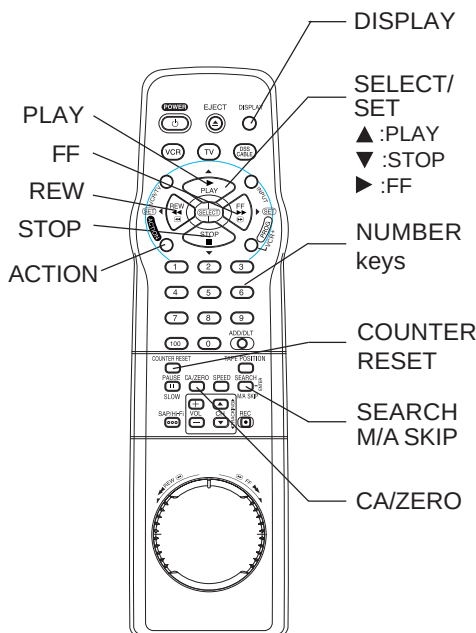
Upon locating end point,

- >search continues 7 sec. past end point,
- >tape rewinds to 10 sec. before end point,
- >tape plays to end point and stops.

Notes

- If Program End Search is started very close to an index mark, that mark may be skipped over.
- To cancel, press **PLAY** or **STOP**.

***Important:** If a remote control button does not work when pressed, press the VCR button on the remote and try the button again.

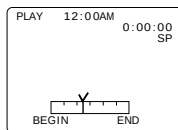


Zero Search

To quickly return to a specified tape location.

1 Press **DISPLAY** during play to display Counter.

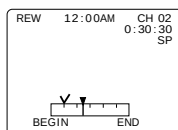
2 Press **COUNTER RESET** at desired position to reset to "0:00:00".



3 Continue to record, playback etc.

4 Press **Stop**.

5 Press **CA/ZERO** in **Stop** mode to start **ZERO SEARCH**.



- Unit will go into FF or REW mode and stop at the last point the Counter was set to 0:00:00.

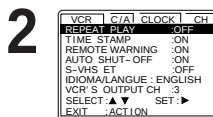
Note

- If a blank portion exists on the tape, and depending on the position of the V mark, the V mark display position may not be accurate.

Repeat Play

Set to playback a recording over and over.

1 Press **ACTION** to display menu.



Press **▲▼** to select **REPEAT PLAY** and press **►** to set ON or OFF.

- Play repeats at tape end or if unrecorded portion over 30 sec. is detected.

3 Press **ACTION** to return to normal screen.

Auto Operation Functions

Auto Play

Insert a tape --> Power comes on, -->Play starts if no record tab (see pg. 4).

Auto Rewind

Play
Manual Record } --> Tape end,
Fast Forward } -->Rewind

Play Auto Eject

(Repeat Play must be off)

Play, -->Tape end, -->Rewind,
-->Tape ejects if no record tab

Special VCR Features

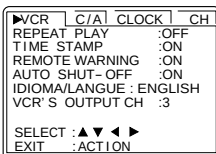
Channel Caption

When set, station name, e.g. ABC, CBS, and channel number appear on-screen. Set up to 24 preset captions, and/or 10 manually created captions.

- ☐ You need a list of stations and the channel numbers you receive them on.

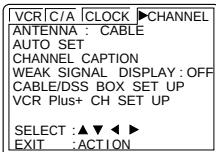
Preset Caption

1



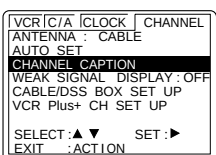
Press **ACTION***
to display MENU.

2



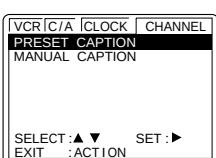
Press **<=>**
to select CHANNEL.

3



Press **<=>**
to select CHANNEL
CAPTION and
press **>** to set.

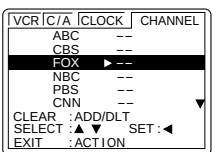
4



Press **<=>**
to select PRESET
CAPTION and
press **>** to set.

- To create your own captions, go to "Manual Caption" on page 31.

5



Assign preset captions.

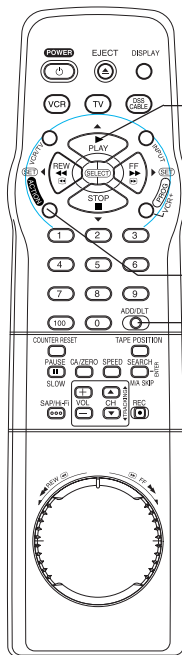
- 1) Press **<=>** to highlight caption.
- 2) Press **>** to move cursor to the right.
- 3) Press **<=>** to select CH number.
- 4) Press **<** to set.
- Repeat step 5 until the list is complete.

To make corrections,

Press **<=>** and **>** to select the channel number, then press **<=>** to change, or ADD/HLT to delete the number.

6

Press **ACTION** twice
to end setup.



**SELECT/
SET**

**<=>:PLAY
>:STOP
<:REW
>:FF**

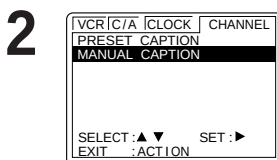
ACTION

ADD/HLT

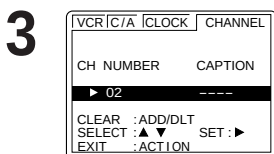
***Important:** If a remote control button does not work when pressed, press the VCR button on the remote and try the button again.

Manual Caption

1 Do "Preset Caption" steps 1~3 on page 30.

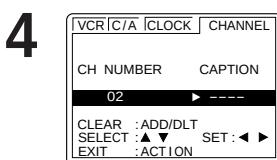


Press **▲▼** to select CHANNEL CAPTION and press **►** to set.



Press **▲▼** to select CH NUMBER and press **►** to move cursor to the right.

- Channels already set and channels deleted from Channel Memory are not displayed.
- You can set a total of ten channel captions.



Press **▲▼** to enter CAPTION and press **◀** to set.

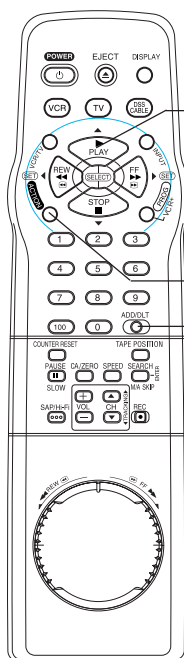
- Characters change in following order.

→A↔B↔C↔...↔Z↔BLANK↔-↔+↔&↔
→9↔...↔2↔1↔0↔+↔-↔!

- Repeat steps 3 and 4 as desired.

To make corrections,

Press **◀►** to move to the incorrect entry, then press **▲▼** to make correction. Or, press ADD/HLT to clear the caption.



SELECT/SET
▲:PLAY
▼:STOP
◀:REW
▶:FF

ACTION

ADD/HLT

Advanced
Operation

5 Press ACTION twice to end setup.

Special VCR Features (continued)

Time Stamp Feature

The VCR writes program data (see example below) about the first 10 seconds of every recording. The information is then displayed the first 10 seconds of playback.

1

VCR	C/A	CLOCK	CH
REPEAT PLAY	:OFF		
TIME STAMP	:ON		
REMOTE WARNING	:ON		
AUTO SHUT-OFF	:ON		
IDIOMA/LANGUE	: ENGLISH		
VCR'S OUTPUT CH	: 3		
SELECT	:▲▼▶◀		
EXIT	:ACTION		

Press **ACTION*** to display MENU.

2

VCR	C/A	CLOCK	CH
REPEAT PLAY	:OFF		
TIME STAMP	:ON		
REMOTE WARNING	:ON		
AUTO SHUT-OFF	:ON		
IDIOMA/LANGUE	: ENGLISH		
VCR'S OUTPUT CH	: 3		
SELECT	:▲▼▶◀		
EXIT	:ACTION		

Press **▲▼** to select TIME STAMP and press **▶** to set.

- When "OFF" is selected, the program data is written on the tape, but will not be displayed.

3

Press **ACTION** again to return to normal screen.

<Time Stamp Example>

One Touch Recording

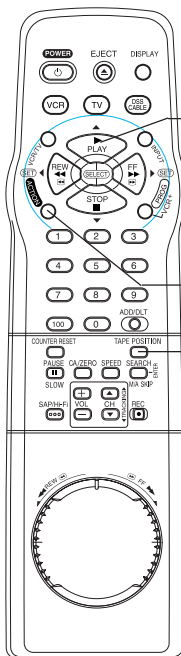
11/11/2001 SUN
12:00PM
CH 08 ABC

Timer Recording

11/11/2001 SUN
12:00PM - 1:00PM
CH 08 ABC MOVIE

Ready Check List

- ☐ Clock is set to correct time.
- ☐ Record tab in place. (See page 4.)



SELECT/SET

▲:PLAY
▼:STOP
◀:REW
▶:FF

ACTION

TAPE POSITION

When Clock is not set...

--/--/----
--:--:--
CH 08 ABC

Shuttle Variable Speed Search

The SHUTTLE Ring allows you to smoothly control the tape speed during special effects playback in both forward or reverse.

Place the forward or reverse search.

Turn SHUTTLE Ring while in Play or Still mode.

- The more you turn the Ring, the faster the search speed will be.

Release the Shuttle mode.

Press a function button such as : PLAY, STOP, etc.

- The VCR performs the function of the button pressed.

Notes

- When the SHUTTLE Ring is turned more than half in Stop mode, normal Fast Forward or Rewind will begin.
- Some noise bars are normal during Shuttle operation.
- After 3 minutes in Still or Slow, the VCR will go into Stop mode.
- When the SHUTTLE Ring is released, the VCR goes into Still mode.

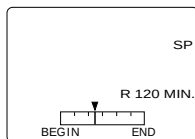
***Important:** If a remote control button does not work when pressed, press the VCR button on the remote and try the button again.

Tape Position and Tape Status Feature

To find out the present tape position.
Tape position cannot be detected for VHS-C Cassette types and tapes of less than 60 minutes length.

1 Press TAPE POSITION to detect Tape Position.

DETECTING TAPE POSITION



- "DETECTING TAPE POSITION" only appears the first time a cassette is inserted, and it takes several seconds for correct indication to appear.
- The present tape position indication is displayed.
- The remaining tape time (in minutes) is displayed according to the current tape speed.

2 Press TAPE POSITION to return to normal screen.

Note

This function cannot display exact amount of tape remaining for tapes over 120 minutes.

VCR Lock Feature

When set to ON, all operations except for timer record and tape eject are prohibited. Useful for households with small children.



To turn on,
 hold down REC on the VCR in Stop mode with no tape inserted for 7 sec.
 (Please ignore the NO CASSETTE warning.)



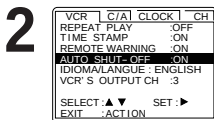
To turn off,
 repeat above.

- VCR Lock cancels in 24 hours if clock is set.

Auto Shut-Off Feature

When set to ON, VCR shuts off if blank tape is played or no signal is detected for 5 min.

1 Press ACTION to display menu.

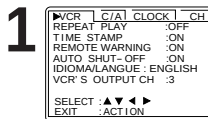


Press ▲▼
 to select AUTO SHUT-OFF and
press ► to set ON or OFF.

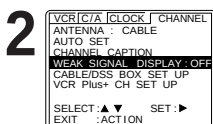
3 Press ACTION to return to normal screen.

Weak Signal Display ON/OFF Feature

When "ON," picture is displayed regardless of signal strength.



Press ACTION
 to display menu.



Press ◀▶
 to select and display CHANNEL,
press ▲▼
 to select WEAK SIGNAL DISPLAY,
 and **press ►** to set ON or OFF.

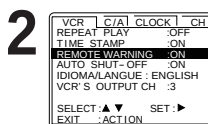
- ON: Picture is displayed regardless of signal condition, and may not always be clearly visible.
- OFF: Screen turns solid blue when signal is weak or non-existent.
- Selecting ON has no effect on connected equipment with blue back feature.

3 Press ACTION to return to normal screen.

Remote Warning ON/OFF Feature

If Multi-brand feature is used (page 20), and this feature is set to on, a warning appears whenever an invalid key is pressed in TV, DSS, or Cable mode.

1 Press ACTION to display menu.



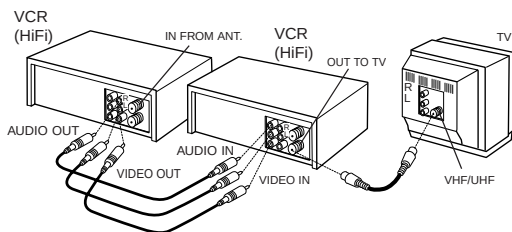
Press ▲▼
 to select REMOTE WARNING and
press ► to set ON or OFF.

- If "OFF," remote warning will not appear if invalid key is pressed.

3 Press ACTION to return to normal screen.

Copying Your Tapes (Dubbing)

Connection



(Video In Terminal on the front of VCR is available)

- ① Connect VIDEO OUT terminal on Playing VCR to VIDEO IN terminal on Recording VCR. To monitor the dubbing, also connect a TV as shown.
- ② Connect "L" and "R" AUDIO OUT terminals on Playing VCR to "L" and "R" AUDIO IN terminals on Recording VCR.

In place of a Playing VCR, you can use other equipment, such as a Camcorder. Simply connect the unit's Audio/Video outputs to the Recording VCR.

Playing (Source) VCR

Recording (Editing) VCR

1

Insert pre-recorded tape.

Insert blank tape with record tab.

2

Press INPUT to set VCR Input mode to LINE1 for Video Input (Rear) or to LINE2 for Video Input (Front). (See "Selecting the Input Mode" below.)

3

Press PLAY, then PAUSE/SLOW immediately to enter PLAY/PAUSE mode.

Press REC, then PAUSE/SLOW immediately to enter REC/PAUSE mode.

The operation of steps 4 and 5 must be done on both playing and recording VCRs at the same time.

4

Press PLAY to start dubbing. Playing VCR starts playback.

Press PAUSE/SLOW to start dubbing. Recording VCR starts recording.

5

Press STOP to stop dubbing.

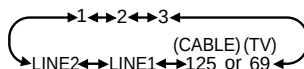
Press STOP to stop dubbing.

■ To Monitor Dubbing on Your TV

- 1 Turn your TV on and tune to the Recording VCR channel (CH3 or CH4).
- 2 Set the VCR/ TV Selector on the Recording VCR to "VCR."

■ Selecting the Input Mode

- Method1: Press INPUT repeatedly.
Channel Number <--> LINE1 <--> LINE2
- Method2: Press CH▲/▼. Display will change as below.



Note

Dubbing tapes protected with Copy Guard will have poor quality results.

- "L1" or "L2" lights on Multi-Function Display (about 4 sec.) when LINE1 or LINE2 is selected.
- LINE1: For rear audio/video connection.
- LINE2: For front audio/video connection.

Caution: Unauthorized exchanging and/or copying of copyrighted recordings may be copyright infringement.

VCR & Cassette Information

Head Cleaning

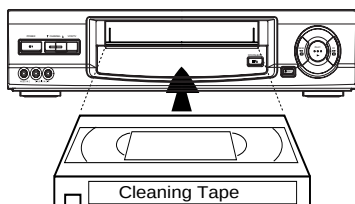
Playing older or damaged tapes may eventually cause video heads to become clogged.

Video Head Clog Sensor

During playback, this screen appears if clogging is detected. To remove screen, press PLAY on the remote or VCR.

VIDEO HEADS MAY
NEED CLEANING
PLEASE INSERT HEAD
CLEANING CASSETTE
OR REFER TO MANUAL

END :PLAY



- Use “dry” type head cleaning cassette only. (Part No. NV-TCL30PT is recommended.)
- Follow cleaning tape instructions carefully. Excessive use of tape can shorten head life.
- If head clog symptoms persist, contact your nearest Factory Servicentre or authorized Servicentre. (See page 39.)

Cleaning the VCR

Use a soft cloth or dusting attachment of a vacuum cleaner to remove dust from the ventilation holes on the back sides and bottom of the cabinet.

Plastic surfaces are easily scratched and can be marred by alcohol and various solvents. Avoid excessive use of oil-based furniture polishes since the materials used in the cabinet will accumulate more dust. We recommend using a nonabrasive, antistatic cleaner and polisher.

Specifications

Power Source:	120 V AC, 60 Hz
Power Consumption:	Power On: Approx. 23 watts Power Off: Approx. 3.0 watts
Video Signal:	EIA Standard NTSC colour
Video Recording System:	4 rotary heads helical scanning system
Audio Track:	1 track (Normal) 2 channel (Hi-Fi Audio Sound)
Tuner:	
Broadcast Channels:	VHF 2-13, UHF 14-69
CABLE Channels:	Midband A through I (14-22) Superband J through W (23-36) Hyperband AA-EEE (37-64) Lowband A-5-A-1 (95-99) Special CABLE channel 5 A (01) Ultraband 65-94, 100-125
Operating Temperature:	5 °C-40 °C (41 °F-104 °F)
Operating Humidity:	10%-75 %
Weight:	2.7 kg (6.0 lbs).
Dimensions:	430 (W) x 98 (H) x 242 (D) mm 16-15/16" (W) x 3-7/8" (H) x 9-9/16" (D)

Note: Designs and specifications are subject to change without notice.

Features for a Quality Picture

Digital Auto Picture

Automatically controls the video output signal for less noise depending on the tape condition.

Digital Auto Tracking

Continuously analyzes the signal and adjusts for optimum picture quality.

Manual Tracking Control (to reduce picture noise)

Use during Playback and Slow Motion mode to reduce picture noise. Press CH (TRACKING) ▲ / ▼ buttons on the remote control or on the VCR until the picture clears up. To return to Auto Tracking, press POWER off, then on again a few seconds later.



V-Lock Control (to reduce picture jitter)

In Still mode, CH (TRACKING) ▲ / ▼ buttons operate as a V-Lock control.

CNR (Colour Noise Reduction)/ ANR (Advanced Noise Reduction)

Colour Noise Reduction reduces the colour noise. Advanced Noise Reduction reduces the luminance noise.

On-Screen Displays (OSD)

Function & Channel Display



When a function button is pressed, e.g. PLAY, or you change channels, a 4 second display appears first in large and then small characters.

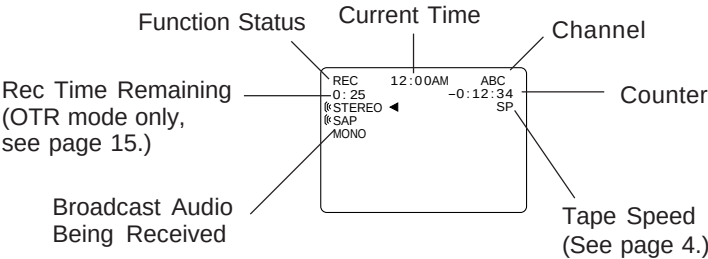
Blank Tape/ No Video Signal Indication

Whenever a blank section of a tape comes up in Play mode, or when the selected channel has no broadcast signal with the Weak Signal Display Feature (page 33) set to OFF, the TV screen will turn solid blue.

VCR Status & Clock Display

To display or remove overlay at right,

--> press DISPLAY.



Warning and Instruction Displays

These displays will alert you to a missed operation or provide further instructions.

OSD	Caution	Pg	OSD	Caution	Pg
NO CH FOUND PLEASE CHECK ANTENNA CABLE CONNECTION THEN PRESS CH UP KEY AGAIN	If no active channels are found for CHANNEL MEMORY...	8	TO CANCEL TIMER REC PRESS POWER THEN STOP KEY	If you press POWER or STOP during a Timer Recording... (visible in VCR mode only)	16
PLEASE SET CLOCK BY PRESSING ACTION KEY	If you attempt to set or review a Timer Recording and the Clock is not set...	16	VIDEO HEADS MAY NEED CLEANING PLEASE INSERT HEAD CLEANING CASSETTE OR REFER TO MANUAL END :PLAY	If head cleaning becomes necessary while playing back a tape...	35
TURN VCR OFF FOR TIMER RECORDING	After a Timer Program has been set...	16	VCR LOCK ACTIVATED	If you press a function button other than STOP/ EJECT or POWER while the VCR is in VCR Lock mode...	33
CHECK CASSETTE RECORD TAB	If you press REC on the remote control or VCR, and a cassette is inserted with no record tab...	4	REMOTE CONTROL IS SET TO CABLE/DSS MODE USE VCR : VCR KEY USE TV : TV KEY	If you press an invalid key on the remote while in CABLE/DSS mode...	20 21 33
NO CASSETTE PLEASE INSERT A CASSETTE	If you press PLAY, FF, REW, or REC on the remote control or VCR without a cassette inserted...	14 15	REMOTE CONTROL IS SET TO TV MODE USE VCR : VCR KEY USE CABLE/DSS : CABLE/DSS	If you press an invalid key on the remote while in TV mode...	20 21 33

Before Requesting Service

Check the following points if you are having trouble with your VCR.

Power	Correction
No power...	• Completely insert Power Plug into an AC outlet. • Set POWER button to on. • Make sure power source is active.
Recording & Playback	Correction
TV program cannot be recorded...	• Check connections between VCR, external antenna, and TV. • Check channel selections. • Make sure your antenna system (CABLE or TV) is correctly set. (Channels [P.12]) • Make sure cassette record tab is intact. (P.4)
Timer recording cannot be performed...	• Confirm that clock is set to current time and date. • Make sure Cable/DSS box (if used) is left on and tuned to channel to be recorded. • Set recording start/stop times correctly. (P.16) • Make sure VCR POWER button is pressed off. (P.16) • Timer recording may not be performed or continued if a power interruption occurs before or during a Timer Recording, even after power is restored.
There is no playback picture, or the playback picture is noisy or contains streaks...	• Select channel 3 or 4 on TV to match VCR output channel (3 or 4) (P.8) or select LINE. • Set VCR/TV selector to "VCR." • Adjust TRACKING control in either direction. (P.35) • Try Head Cleaning. (P.35)
Special effects playback, picture may contain some vertical jitter when using a TV with an Automatic Vertical Hold Control...	• Set TV's Vertical Hold Control to MANUAL, then adjust.
VCR cannot be controlled...	• Make sure VCR power is on. • Check Remote batteries. • Make sure VCR LOCK is set to off. (P.33) • Make sure Remote is in proper mode.(P.20) • Make sure Timer Record is not in progress.
Remote Control	Correction
VCR cannot be remote controlled...	• Make sure VCR power is on. • Make sure Remote is in VCR mode. • Aim Remote Control directly at remote sensor on VCR. (P.6) • Avoid any object blocking signal path. • Check Remote batteries. (P.4) • Make sure VCR LOCK is set to off. (P.33) • Exposing VCR remote sensor to direct fluorescent or outdoor light may cause signal interference.
ACTION and PROG/VCR+ buttons do not respond...	• Check connections between VCR, external antenna, and TV. • Press VCR button for VCR mode. (P.20) • Check Remote batteries. (P.4)
Miscellaneous	Correction
Programs cannot be viewed on TV...	• Make sure TV power is on. • Make sure TV is set to output of VCR. • Check connections between VCR, external antenna, and TV. • Set VCR/TV selector to "TV." (P.15) • Make sure proper signal source is selected.
Video cassette cannot be inserted...	• Insert the cassette with window side up; record tab facing you. • Check if a tape is already in the unit.
Video cassette cannot be removed...	• Completely insert Power Plug into an AC outlet.
Video cassette ejects when a recording is started or the power is turned off for timer recording...	• Make sure cassette record tab is intact. (P.4)
In Stop mode, the motor (CYLINDER) continues to rotate...	• To enable Quick play mechanism, the cylinder will rotate for about 3 minutes. This reduces response time from Stop to Play mode and from Play to Rewind Search mode.

Panasonic Canada Inc.

5770 Ambler Drive, Mississauga, Ontario L4W 2T3

PANASONIC PRODUCT – LIMITED WARRANTY

Panasonic Canada Inc. warrants this product to be free from defects in material and workmanship and agrees to remedy any such defect for a period as stated below from the date of original purchase.

VHS Video Cassette Recorder – One (1) year, parts and labour

LIMITATIONS AND EXCLUSIONS

This warranty does not apply to products purchased outside Canada or to any product which has been improperly installed, subjected to usage for which the product was not designed, misused or abused, damaged during shipping, or which has been altered or repaired in any way that affects the reliability or detracts from the performance, nor does it cover any product which is used commercially. Dry cell batteries are also excluded from coverage under this warranty.

This warranty is extended to the original end user purchaser only. A purchase receipt or other proof of date of original purchase is required before warranty service is performed.

THIS EXPRESS, LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, EXCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT WILL PANASONIC CANADA INC. BE LIABLE FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES.

In certain instances, some jurisdictions do not allow the exclusion or limitation of incidental or consequential damages, or the exclusion of implied warranties, so the above limitations and exclusions may not be applicable.

Servicentre List

WARRANTY SERVICE

For product operation and information assistance, please contact your Dealer or our Customer Care Centre at:

Telephone #:	Fax #:	Web:
(905) 624-5505	(905) 238-2360	www.panasonic.ca

For product repairs, please contact one of the following:

- Your Dealer who will inform you of an authorized Servicentre nearest you.
- Our Customer Care Centre at (905) 624-5505 or www.panasonic.ca
- A Panasonic Factory Servicentre listed below:

<u>Richmond, British Columbia</u>	<u>Calgary, Alberta</u>	<u>Mississauga, Ontario</u>
Panasonic Canada Inc. 13131 Bathgate Place Richmond, BC V6V 1Z3 Tel: (604) 278-4211 Fax: (604) 278-5627	Panasonic Canada Inc. 6835-8 th St. N. E. Calgary, AB T2E 7H7 Tel: (403) 295-3955 Fax: (403) 274-5493	Panasonic Canada Inc. 5770 Ambler Dr. Mississauga, ON L4W 2T3 Tel: (905) 624-8447 Fax: (905) 238-2418

Lachine, Québec

Panasonic Canada Inc.
3075, rue Louis A. Amos
Lachine, QC H8T 1C4
Tel: (514) 633-8684
Fax: (514) 633-8020

CUSTOMER’S RECORD:

Customer Name: _____
Model Number: _____ **Serial Number:** _____
Date of Purchase: _____
Dealer’s Name: _____
Address: _____ **Phone Number:** _____

IF YOU SHIP THE PRODUCT TO A SERVICENTRE
Carefully pack and send prepaid, adequately insured and preferably in the original carton. Include details of the defect claimed, and proof of date of original purchase.

For Your
Information

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Panasonic®

Panasonic Canada Inc.

5770 Ambler Drive,
Mississauga, Ontario L4W 2T3
(905) 624-5010

www.panasonic.ca

Montréal: 3075 Louis A. Amos, Lachine, Québec H8T 1C4 (514) 633-8684
Toronto: 5770 Ambler Drive, Mississauga, Ontario L4W 2T3 (905) 238-2181
Calgary: 6835 8th Street N.E., Calgary, Alberta T2E 7H7 (403) 295-3922
Vancouver: 13131 Bathgate Place, Richmond, BC V6V 1Z3 (604) 278-4211

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NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

MAIN C.B.A. (POWER SUPPLY/VIDEO/AUDIO SECTION)

MODE PIN NO.	STOP	MODE PIN NO.	STOP	MODE PIN NO.	STOP	MODE PIN NO.	STOP	MODE PIN NO.	STOP	MODE PIN NO.	STOP	MODE PIN NO.	STOP	MODE PIN NO.	STOP
IC1001		46	5.0	IC3101		25	5.1	43	4.9	Q1083		TP3101	2.9		
1	5.2	47	5.0	1	2.8	26	---	44	2.4	E	0	TP3102	3.0		
2	4.2	48	0	2	5.1	27	2.4	45	5.2	C	1.5	TP3103	1.9		
3	1.4	49	0	3	0	28	2.9	46	3.7	B	0.3	TP3150	4.1		
4	1.4	50	0.4	4	2.9	29	2.6	47	1.8	Q3001		TP3151	2.3		
IC1002		51	0	5	3.0	30	3.0	48	2.3	E	2.1	TP3152	2.6		
1	2.5	52	1.6	6	-4.6	31	3.1	49	3.6	C	0	TP3153	2.6		
2	0	53	2.0	7	2.2	32	2.5	50	3.5	B	2.8	TP3401	0		
3	4.2	54	2.1	8	3.5	33	2.9	51	5.1	Q3203 (C)		TP3801	0		
IC3001		55	2.1	IC3201 (C)		34	3.0	52	3.5	E	2.5	TP3802	5.1		
1	5.0	56	2.2	1	0	35	5.1	53	5.9	C	5.0	TP3803	0.1		
2	2.0	57	2.2	2	1.4	36	0	54	2.4	B	2.8	TP3804	2.6		
3	2.3	58	2.3	3	5.1	IC4201		55	0	Q3875		TP3805	0.1		
4	2.5	59	2.2	4	1.3	1	0	56	0.4	E	2.7	TP3806	0.1		
5	2.1	60	0	5	2.5	2	0	57	5.9	C	0	TP3807	0.4		
6	2.7	61	3.2	6	3.0	3	1.9	58	12.0	B	2.0	TP4002	0		
7	2.0	62	3.0	7	0	4	0	59	6.0	Q4001		TP4011	2.6		
8	0	63	3.0	8	5.1	5	2.5	60	0.8	E	4.4	TP4101	0		
9	1.9	64	5.1	9	2.5	6	2.5	61	2.6	C	5.1	TP4102	0		
10	1.8	65	2.7	10	2.5	7	2.1	62	2.5	B	5.1	TP4103	0		
11	2.0	66	3.0	11	0.1	8	0.4	63	2.8	Q4002		TP4201	0		
12	2.2	67	2.6	12	10.7	9	0.1	64	0.6	E	0.8	TP4202	0		
13	2.0	68	2.6	13	1.9	10	0.4			C	0	TP4203	0		
14	2.8	69	2.6	14	3.7	11	0.1	Q1001		B	0	TP4204	0		
15	2.0	70	0	15	2.5	12	2.1	E	0.3	Q4003		TP4205	1.6		
16	2.4	71	0	16	1.3	13	2.7	C	0	E	0.8	TP4206	3.8		
17	0.1	72	3.1	17	0	14	0.1	B	134.4	C	0	TP4207	0.8		
18	4.5	73	0	18	2.9	15	0.4	Q1002		B	0	TP4208	0.4		
19	2.5	74	3.0	19	2.5	16	2.4	E	0	Q4101					
20	3.5	75	3.0	20	5.1	17	0.8	C	0.3	E	0				
21	2.8	76	2.0	IC3801		18	2.6	B	0.6	C	0				
22	0	77	2.5	1	5.2	19	0.1	Q1051		B	0				
23	3.4	78	2.8	2	1.1	20	0	E	12.0						
24	2.6	79	2.6	3	3.1	21	0	C	15.0	TP1001	0				
25	2.6	80	2.8	4	3.1	22	0	B	12.5	TP1002	33.0				
26	2.6	81	5.0	5	2.4	23	0	Q1052		TP1003	15.0				
27	5.0	82	3.3	6	---	24	2.2	E	0.7	TP1005	5.3				
28	0.3	83	0.1	7	0	25	5.1	C	12.5	TP1006	5.6				
29	3.8	84	5.0	8	0	26	0.1	B	0	TP1007	0				
30	5.0	85	4.3	9	---	27	0.1	Q1053		TP1009	0				
31	1.8	86	---	10	3.1	28	3.8	E	5.2	TP1050	5.2				
32	0	87	4.9	11	0	29	1.6	C	5.3	TP1058	12.0				
33	4.8	88	4.8	12	1.9	30	0.8	B	6.0	TP1080	0.1				
34	---	89	2.3	13	0	31	0.2	Q1080		TP1081	15.0				
35	1.9	90	2.8	14	---	32	2.6	E	24.0	TP3001	2.8				
36	5.1	91	0.9	15	1.1	33	2.6	C	14.6	TP3002	2.8				
37	2.6	92	2.7	16	0	34	0.8	B	24.0	TP3003	2.0				
38	2.6	93	0	17	---	35	2.5	Q1081		TP3004	4.3				
39	0.3	94	0.1	18	0.6	36	0	E	0	TP3005	0.1				
40	2.6	95	1.8	19	---	37	1.9	C	24.0	TP3006	2.5				
41	0	96	3.0	20	---	38	0	B	0	TP3007	2.0				
42	2.6	97	0.1	21	3.3	39	0.1	Q1082		TP3008	3.4				
43	2.6	98	3.1	22	2.0	40	5.0	E	15.2	TP3009	0				
44	2.6	99	2.6	23	0	41	0	C	15.2	TP3010	5.1				
45	2.6	100	3.1	24	1.8	42	4.9	B	14.5	TP3011	0.4				

COMPARISON CHART OF MODELS & MARKS	
MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

MAIN C.B.A. (SYSTEM CONTROL/SERVO SECTION)

MODE PIN NO.	REC	PLAY
IC6001		
1	5.2	5.2
2	2.3	0
3	4.7	4.9
4	4.8	4.7
5	4.9	4.9
6	0	0
7	0	0
8	0	0
9	0	0
10	5.1	5.2
11	5.2	5.2
12	0	0
13	5.2	5.2
14	5.2	5.2
15	0	0
16	5.2	5.2
17	4.8	4.8
18	4.8	4.8
19	5.2	5.2
20	5.1	5.1
21	0	0
22	2.3	2.4
23	2.6	2.6
24	0	0
25	5.0	5.0
26	0	0
27	0	2.6
28	5.2	0
29	3.8	3.8
30	0	0
31	5.1	5.1
32	0	0
33	2.4	2.4
34	2.6	2.6
35	5.1	0
36	4.8	5.2
37	2.6	2.7
38	2.5	2.5
39	0	0
40	4.3	4.3
41	4.3	4.3
42	0	0
43	4.3	4.3
44	4.4	4.3
45	4.3	4.3
46	4.4	4.3
47	2.1	2.1
48	0	0
49	2.1	2.1
50	2.7	2.7
51	5.3	5.3
52	2.6	2.6
53	2.6	2.6
54	0	0

MODE PIN NO.	REC	PLAY
55	0	0
56	5.2	5.2
57	0	0
58	4.4	4.4
59	0	0
60	5.1	5.1
61	0	0
62	5.1	0
63	5.2	5.2
64	2.5	2.5
65	2.5	2.5
66	0.3	0.3
67	2.6	2.6
68	2.6	2.6
69	2.6	2.6
70	2.6	2.6
71	0	0
72	2.6	2.6
73	5.2	5.2
74	3.0	0
75	2.2	2.5
76	0	2.6
77	0.2	0.1
78	0	2.9
79	4.3	4.5
80	4.4	4.5
81	0.1	4.8
82	0.4	0.3
83	0	0.1
84	0	0
85	2.5	2.5
86	0.1	0.1
87	5.1	5.1
88	5.3	5.3
89	0.1	5.3
90	5.1	5.1
91	0	5.3
92	0	5.1
93	0.1	5.1
94	5.1	5.1
95	0	0.1
96	5.0	0.1
97	0	0
98	2.6	0.2
99	5.2	0
100	4.4	4.4
IC6002		
1	0	0
2	5.1	4.9
3	1.2	1.2
4	0	0
IC6003		
1	0	0
2	5.1	5.1
3	2.4	2.4

MODE PIN NO.	REC	PLAY
4	1.2	1.2
IC6004		
1	5.2	5.2
2	5.2	5.2
3	0	0
IC6005		
1	0	0
2	0	0
3	0	0
4	0	0
5	4.8	4.8
6	4.8	4.8
7	0	0
8	5.3	5.3
Q6001		
E	0	0
C	5.2	5.2
B	0	0
Q6002		
E	11.1	12.0
C	11.8	0
B	12.0	12.0
Q6003		
E	5.2	0
C	11.1	12.0
B	4.5	0
Q6005		
E	4.4	4.4
C	5.2	5.2
B	5.3	5.3
Q6006		
E	0.7	0.7
C	0.1	0.1
B	0	0
Q6007 (A)		
E	5.2	5.2
C	5.2	5.2
B	0	0
Q6009		
E	0	0
C	5.0	5.1
Q6010		
E	0	0
C	5.0	5.0
TP6001	5.1	5.1
TP6002	5.1	5.1
TP6003	3.5	2.7
TP6004	5.0	5.1
TP6005	4.9	5.0
TP6007	0	0
TP6008	0	0
TP6009	5.3	5.3
TP6010	4.8	4.7

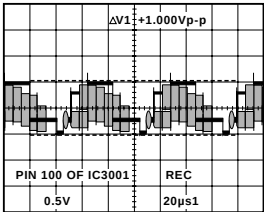
[illegible]

CAPSTAN STATOR C.B.A.

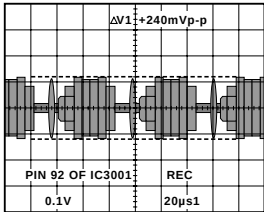
[illegible]

MODEL	MARK
PV-V4621	A
PV-V4621-K	B
PV-V4661-K	C

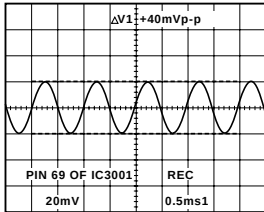
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.



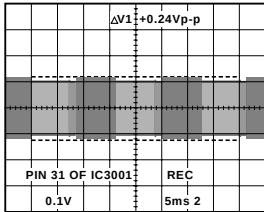
WF1



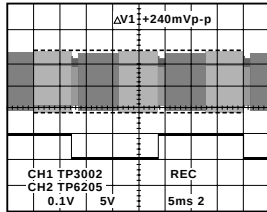
WF6



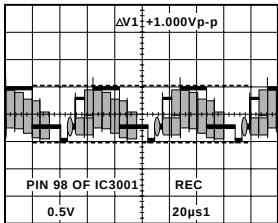
WF10



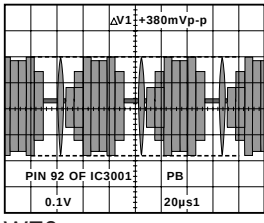
WF15



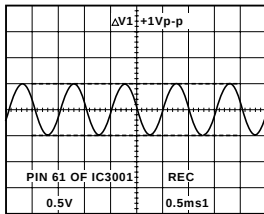
CH1 WF17
CH2 WF21



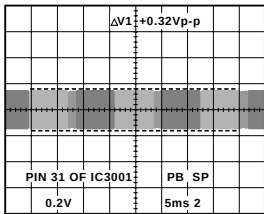
WF2



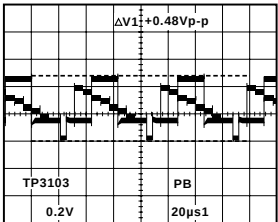
WF6



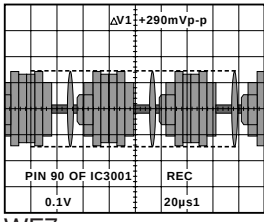
WF11



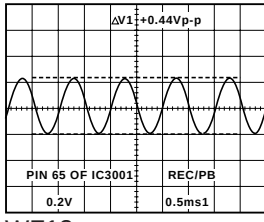
WF15



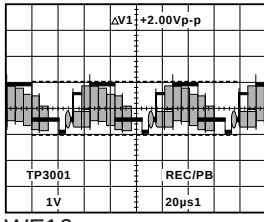
WF3



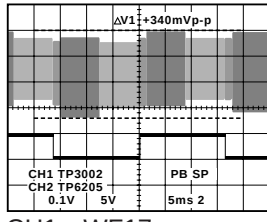
WF7



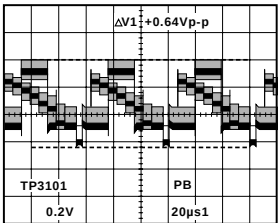
WF12



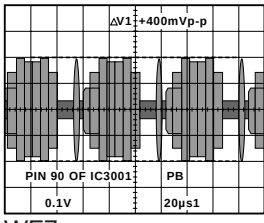
WF16



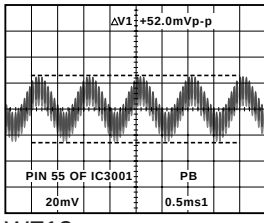
CH1 WF17
CH2 WF21



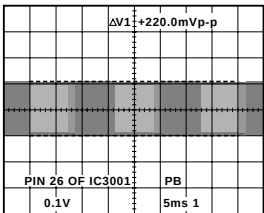
WF4



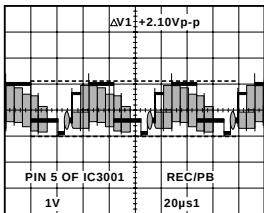
WF7



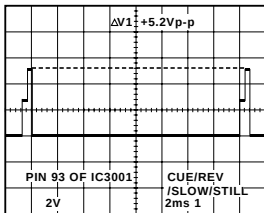
WF13



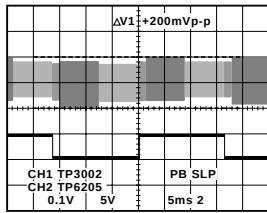
WF5



WF8

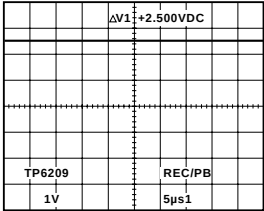


WF14

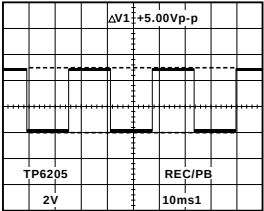


CH1 WF17
CH2 WF21

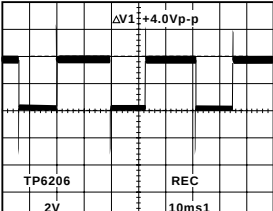
NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.



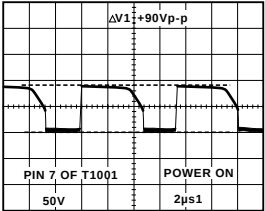
WF18



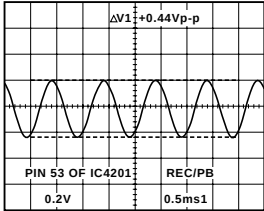
WF21



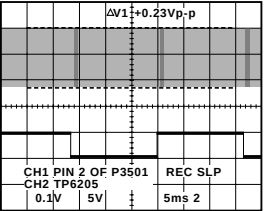
WF24



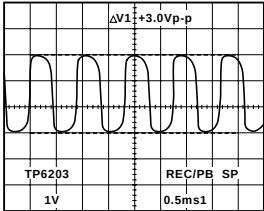
WF28



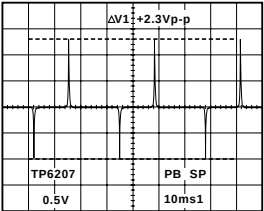
WF33



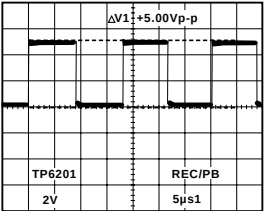
CH1 WF38
CH2 WF21



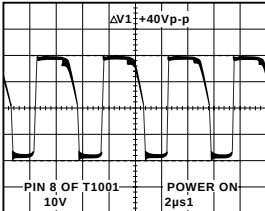
WF19



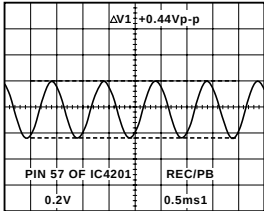
WF22



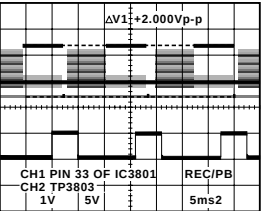
WF25



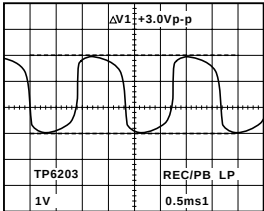
WF29



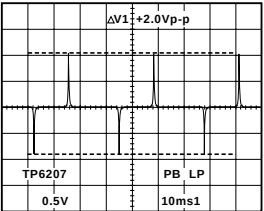
WF34



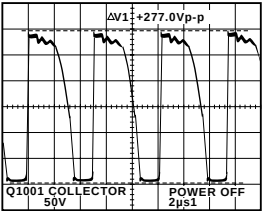
CH1 WF40
CH2 WF41



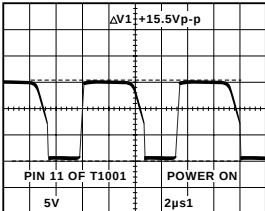
WF19



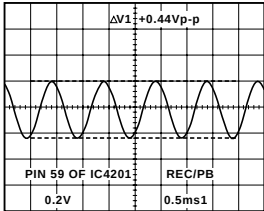
WF22



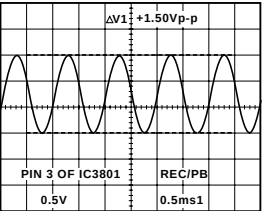
WF26



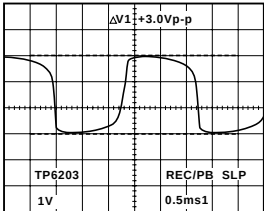
WF30



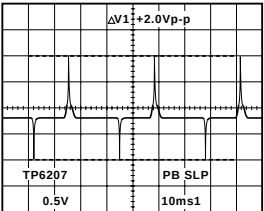
WF35



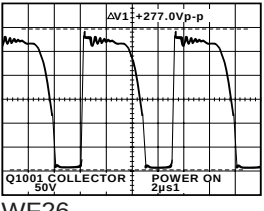
WF42



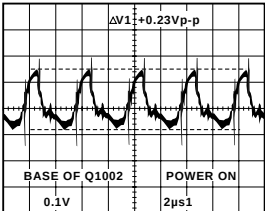
WF19



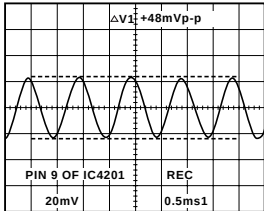
WF22



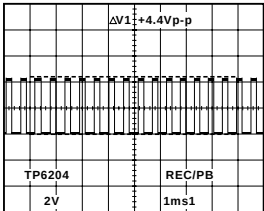
WF26



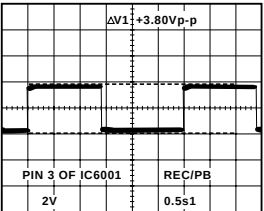
WF31



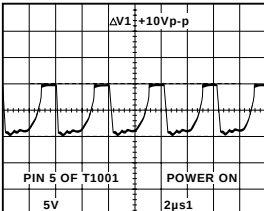
WF36



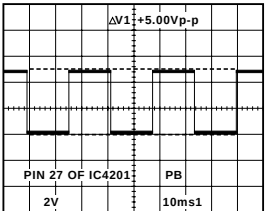
WF20



WF23

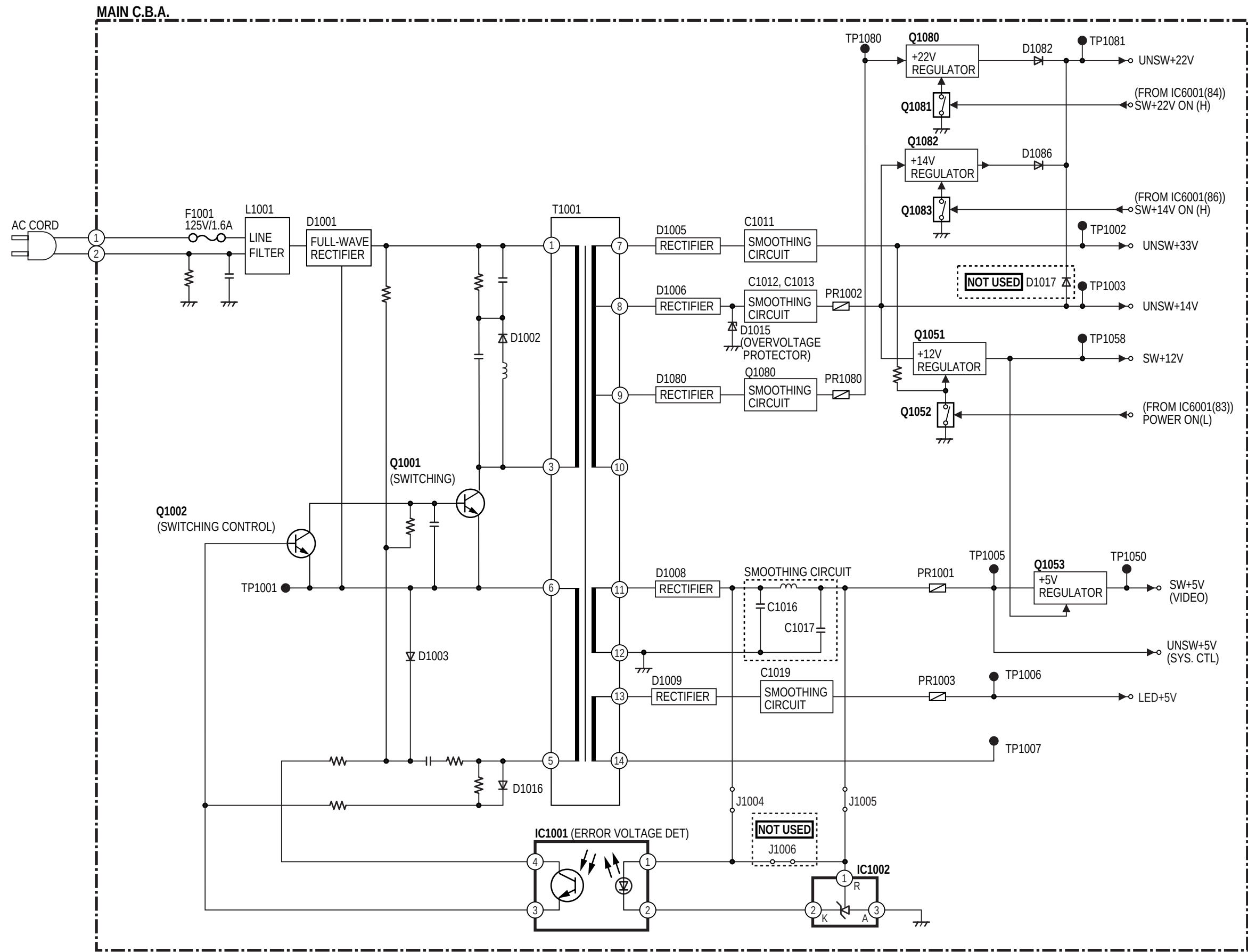


WF27

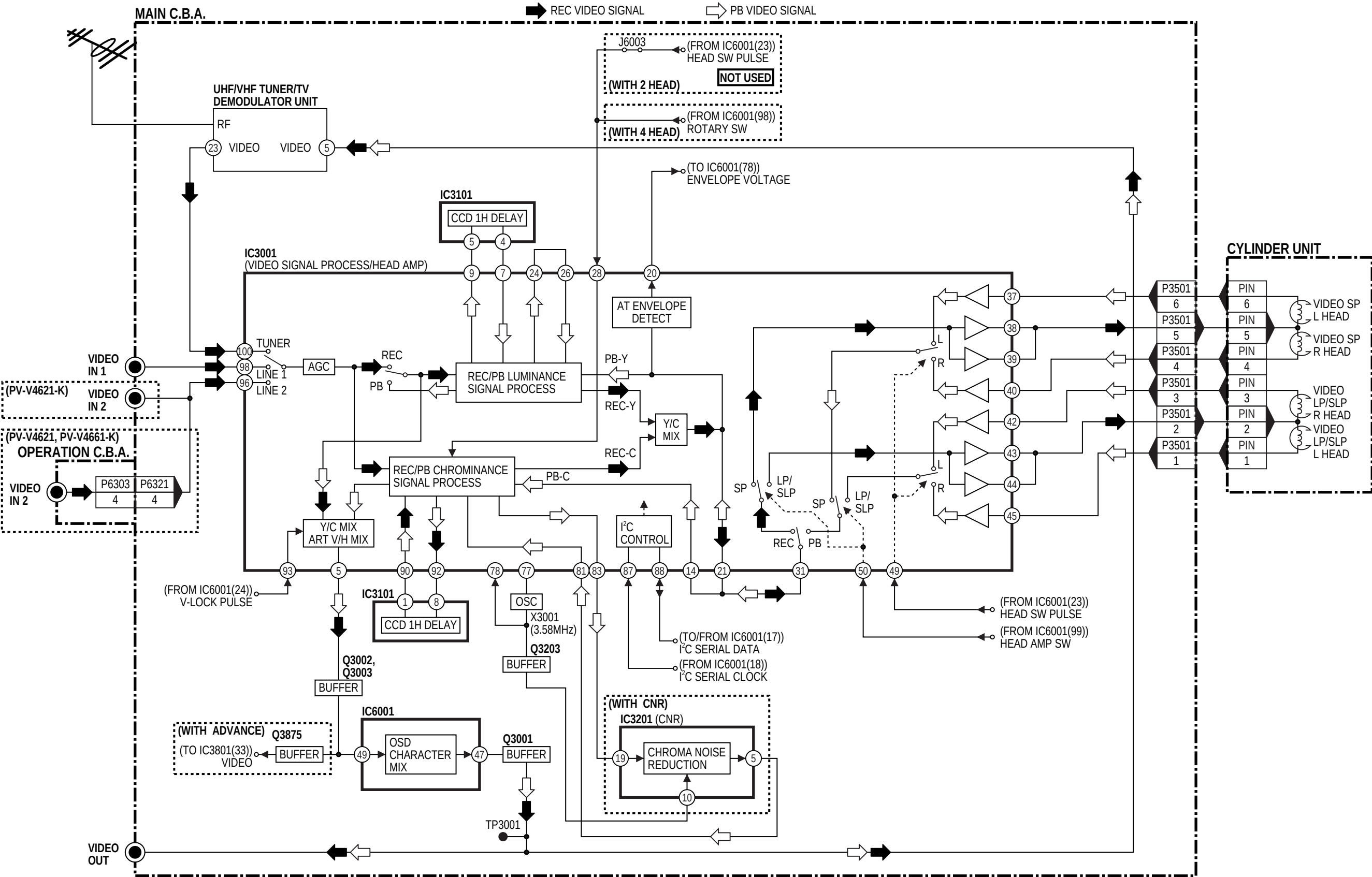


WF32 (G,H,I,J,K,L,M,N)

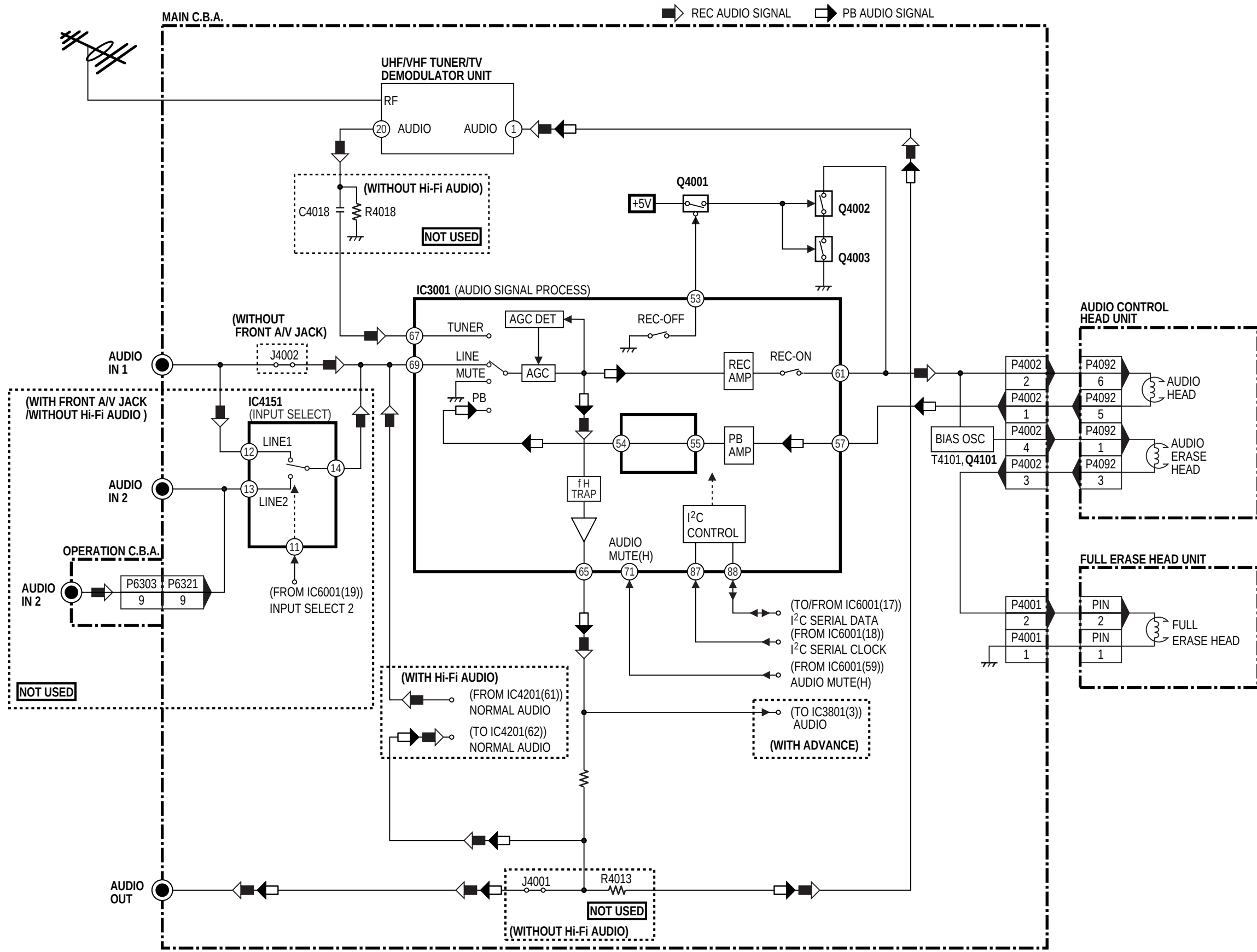
POWER SUPPLY BLOCK DIAGRAM



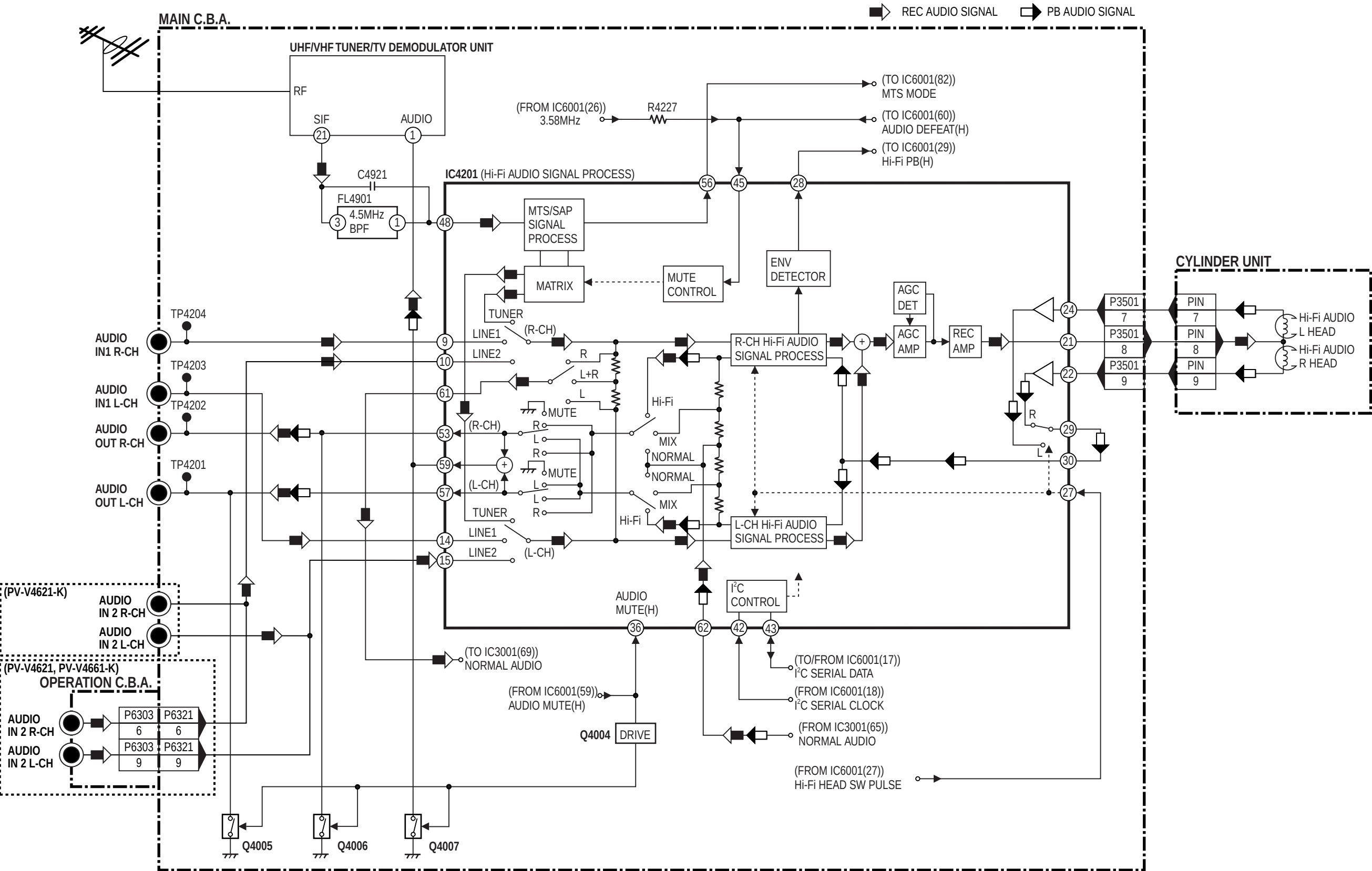
VIDEO SIGNAL PATH BLOCK DIAGRAM



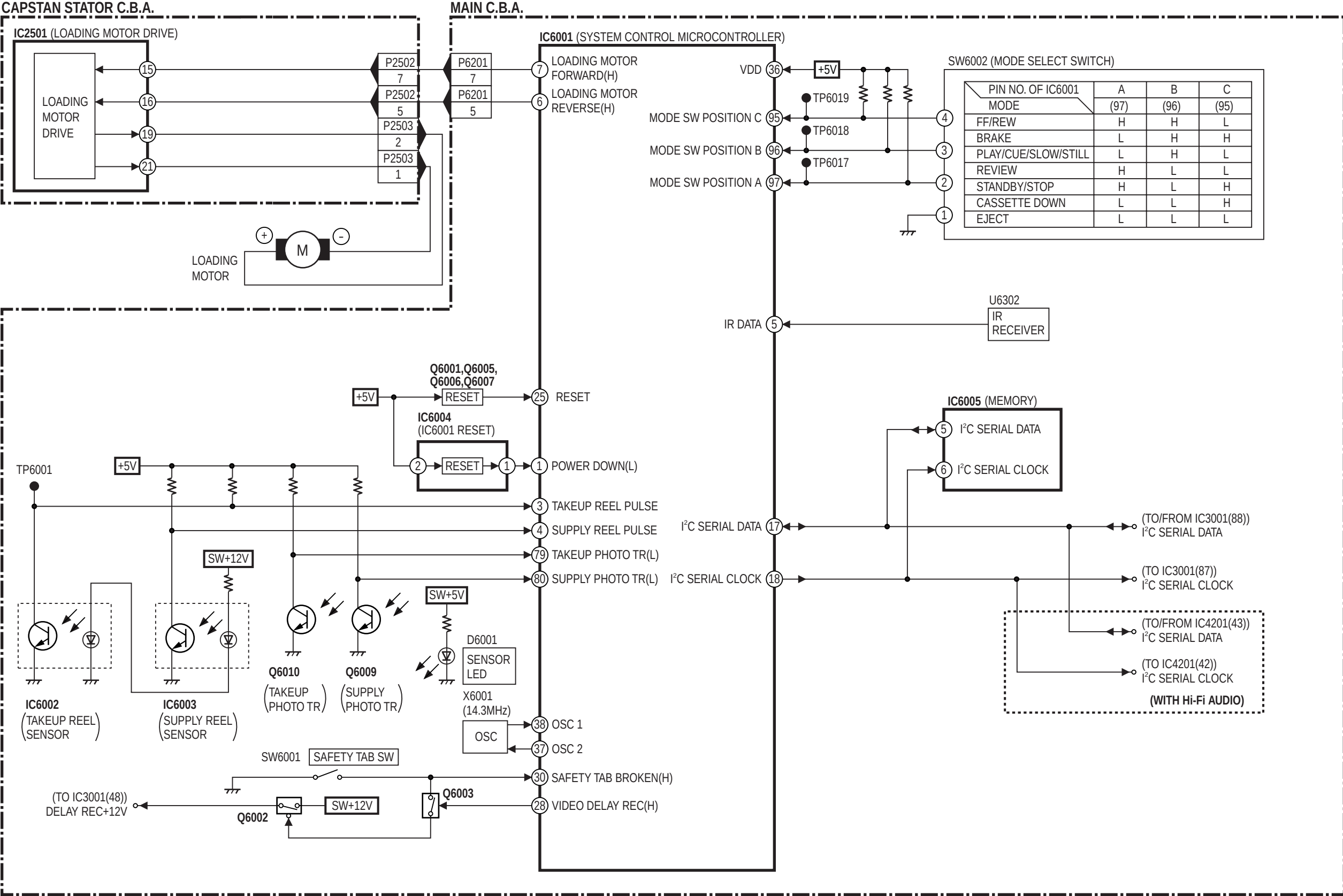
AUDIO SIGNAL PATH BLOCK DIAGRAM



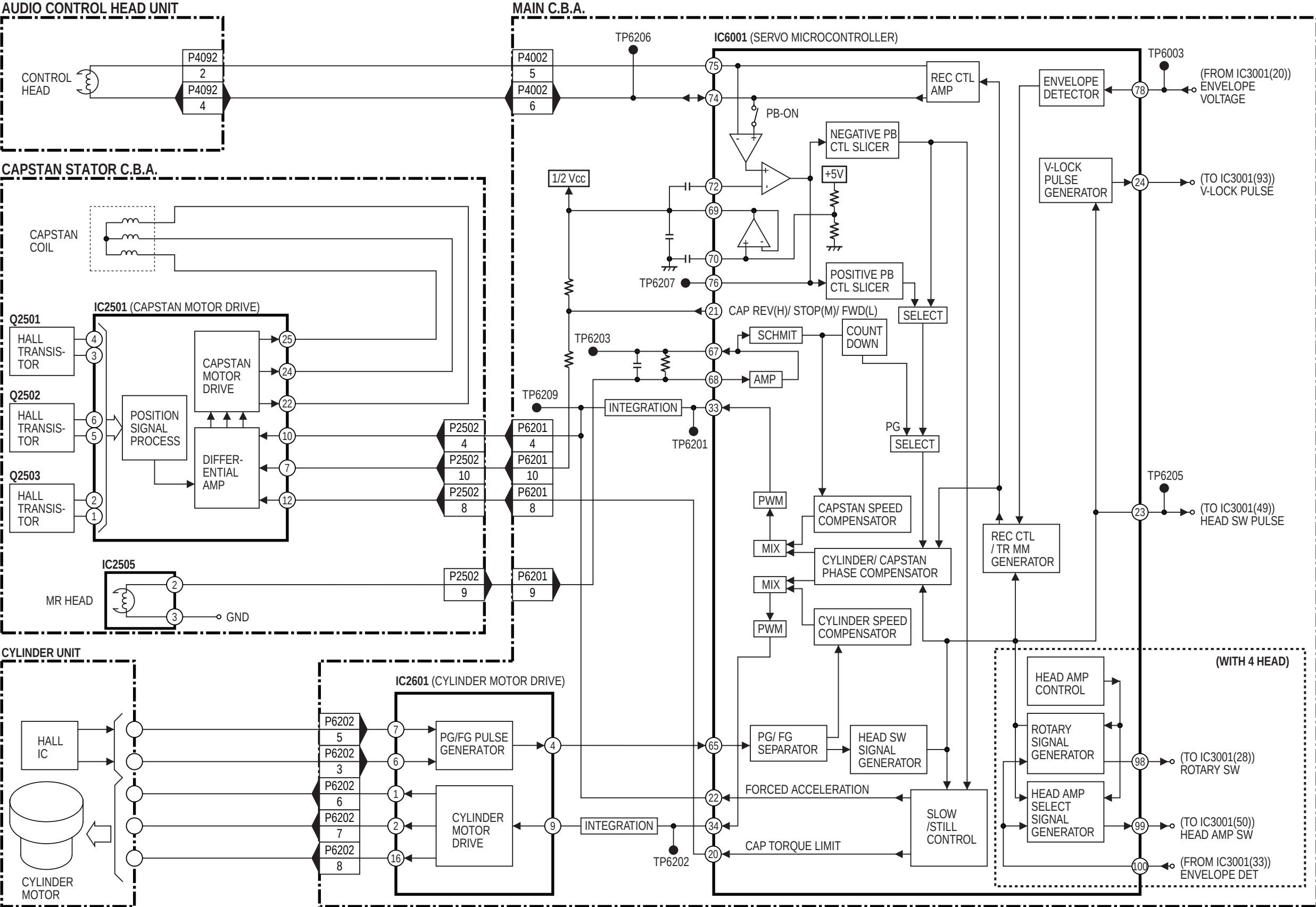
Hi-Fi AUDIO SIGNAL PATH BLOCK DIAGRAM



SYSTEM CONTROL BLOCK DIAGRAM



SERVO BLOCK DIAGRAM



OPERATION BLOCK DIAGRAM

MAIN C.B.A.

PV-V4621, PV-V4661-K			PV-V4621-K		
OUT IN	SCAN 1 PIN 93	SCAN 2 PIN 94	OUT IN	SCAN 1 PIN 93	SCAN 2 PIN 94
DATA 8 PIN 40	—	REC /TIME	DATA 8 PIN 40	—	STOP /EJECT
DATA 9 PIN 41	—	REW	DATA 9 PIN 41	—	PLAY
DATA 10 PIN 43	—	FF	DATA 10 PIN 43	—	CH UP
DATA 11 PIN 44	POWER	CH DOWN	DATA 11 PIN 44	POWER	FF
DATA 12 PIN 45	CH UP	VCR/TV	DATA 12 PIN 45	VCR/TV	CH DOWN
DATA 13 PIN 46	STOP /EJECT	PLAY	DATA 13 PIN 46	REC /TIME	REW

IC6001
(SYSTEM CONTROL MICROCONTROLLER)

IC6301
(INDICATOR PANEL CONTROL)

40 KEY DATA 8
41 KEY DATA 9
43 KEY DATA 10
44 KEY DATA 11
45 KEY DATA 12
46 KEY DATA 13

DIGIT 1 6
DIGIT 2 7
DIGIT 3 8
DIGIT 4 9
DIGIT 5 11
SEGMENT a 22
SEGMENT b 21
SEGMENT c 20
SEGMENT d 18
SEGMENT e 17
SEGMENT f 16
SEGMENT g 15
SEGMENT h 14
SEGMENT i 13
SEGMENT j 12

DISPLAY TUBE

DISPLAY TUBE

FIP

FIP

GRID

SEGMENT

LED

OPERATION C.B.A.

IC6401 (CATV CONTROL)

CATV CS (L) 15

CATV DATA 16

CATV SCK 3

IR CODE 8

VDD 9

RESET 13

X IN 11

X OUT 10

(WITH CABLE BOX CONTROL)

NOT USED

P6302

P6302

P6302

P6320

P6320

P6320

6

7

8

IC6301 CS (L) 57

FIP DRIVER OE (L) 35

SERIAL DATA 0 13

SERIAL CLOCK 1 11

POWER ON(L) 83

VCR LED ON(H) 31

TIMER LED ON(H) 32

REW LED ON(H) 8

FF LED ON(H) 9

PLAY LED ON(H) 92

REC LED ON(H) 35

IC6301 CS (L) 4

FIP DRIVER OE (L) 24

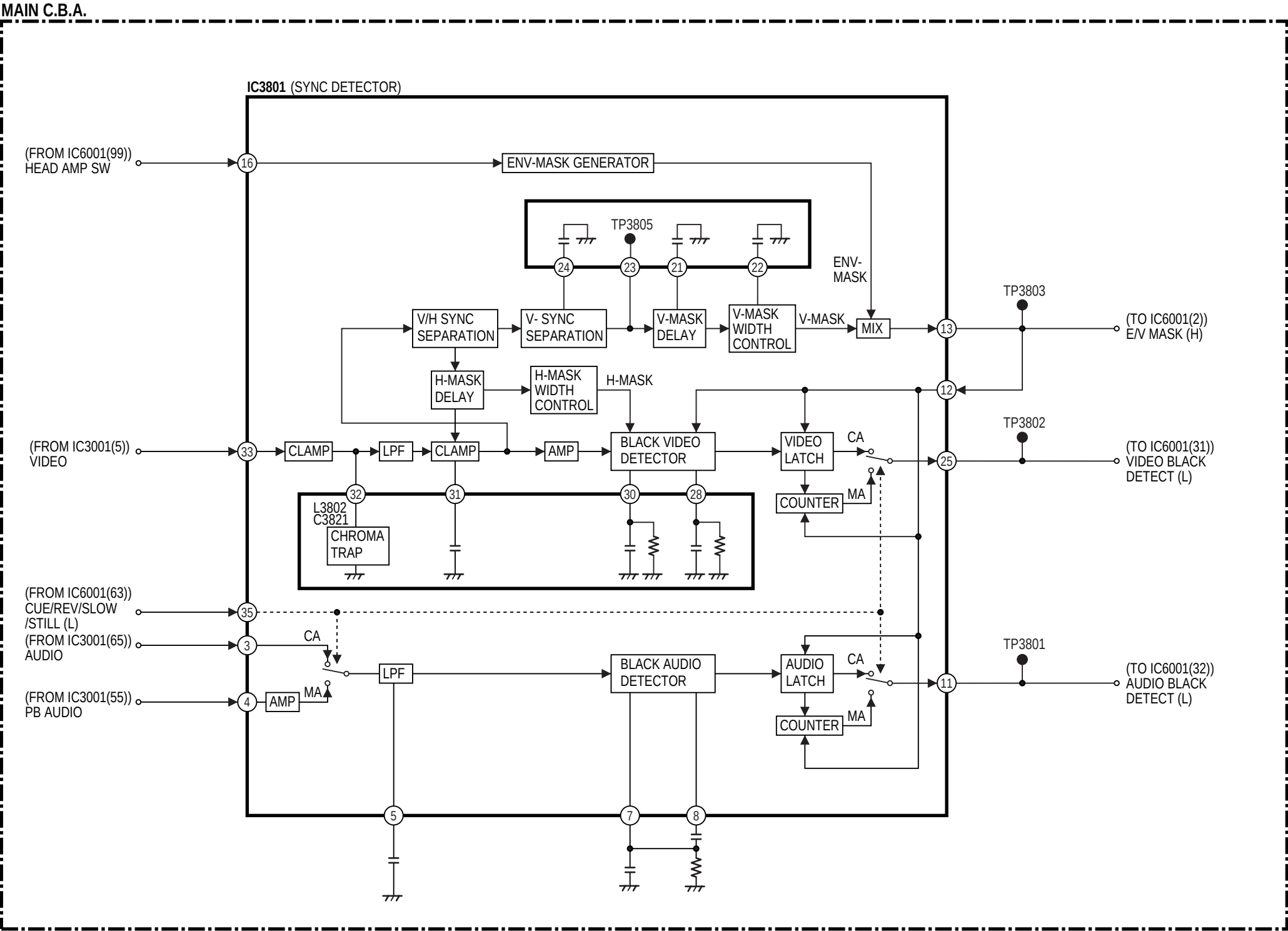
SERIAL DATA 0 2

SERIAL CLOCK 1 3

SEGMENT

NOT USED

ADVANCE BLOCK DIAGRAM



MAIN C.B.A. VEPS6073HA/VEPS6073HC (A) / VEPS6073HB (C)

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 1.6A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D'T INCENDIE N'Y UTILISERQUE DES FUSIBLE DE MÊME
TYPE 1.6A 125V

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

NOTE:
CIRCUIT BOARD LAYOUT SHOWS COMPONENTS INSTALLED FOR VARIOUS MODELS.
FOR PROPER PARTS CONTENT FOR THE MODEL YOU ARE SERVICING,
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST.

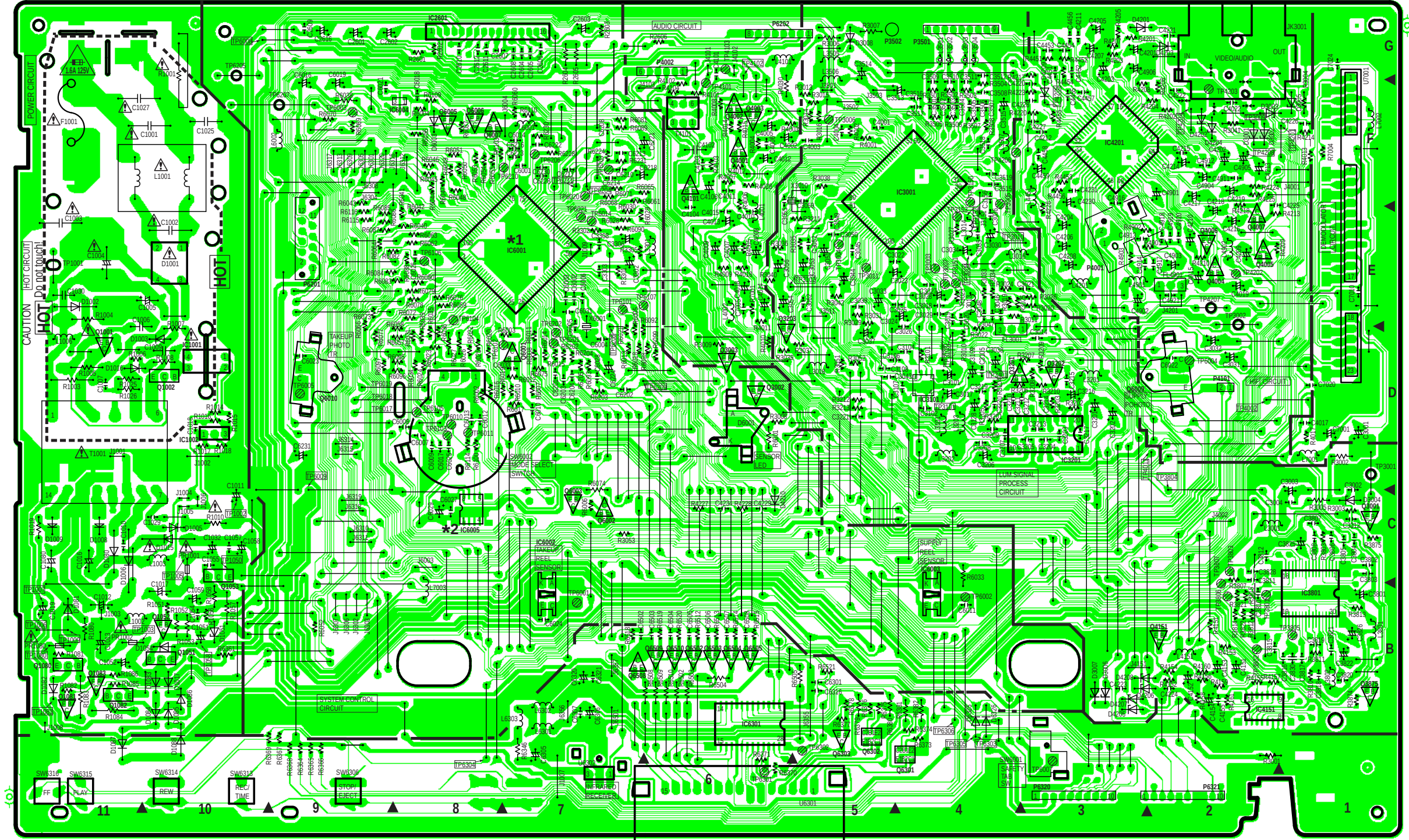
NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

*1,*2 PV-V4621 replacement note:
There are 2 types of Main C.B.A. (E10) for PV-V4621.
VEPS6073HA is used in early products and has been changed to VEPS6073HC on running change basis
in later products. When replacing Microcontroller IC (IC6001) or EEP ROM IC (IC6005), be sure to confirm
which Main C.B.A. is used for the unit you are servicing.
The parts used for each Main C.B.A. are as follows.

Main C.B.A. (E10)	Microcontroller IC (IC6001)	EEP ROM IC (IC6005)
VEPS6073HA	MN101D02HPJ	LSUQ0030
VEPS6073HC	MN101D02HPJ1	KS24C011CS or AT24C01A10SI or BR24C01AF-E2 or BR24C01AFWE2 or KS24C011IS or M24C01-MN6

HOT CIRCUIT.BE CAREFUL AND USE AN ISOLATION TRANSFORMER WHEN SERVICING.



MAIN C.B.A. VEPS6071HB (B)

CAUTION: FOR CONTINUED PROTECTION AGAINST FIRE HAZARD,
REPLACE ONLY WITH THE SAME TYPE 1.6A 125V FUSE.
ATTENTION: POUR UNE PROTECTION CONTINUE LES RISQUES
D'INCENDIE N'UTILISER QUE DES FUSIBLE DE MÊME
TYPE 1.6A 125V



IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN ⚠ HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS,
USE ONLY THE SPECIFIED PARTS.

NOTE:
CIRCUIT BOARD LAYOUT SHOWS COMPONENTS INSTALLED FOR VARIOUS MODELS.
FOR PROPER PARTS CONTENT FOR THE MODEL YOU ARE SERVICING,
PLEASE REFER TO THE SCHEMATIC DIAGRAM AND PARTS LIST.

NOTE:
CIRCUIT BOARD LAYOUT INCLUDES COMPONENTS WHICH ARE NOT USED.

NOTE:
FOR SCHEMATIC DIAGRAM AND CIRCUIT BOARD LAYOUT NOTES,
REFER TO BEGINNING OF SCHEMATIC SECTION.

COMPARISON CHART OF MODELS & MARKS		
MODEL	MARK	
PV-V4621	A	
PV-V4621-K	B	
PV-V4661-K	C	

HOT CIRCUIT.BE CAREFUL AND USE AN ISOLATION TRANSFORMER WHEN SERVICING.

